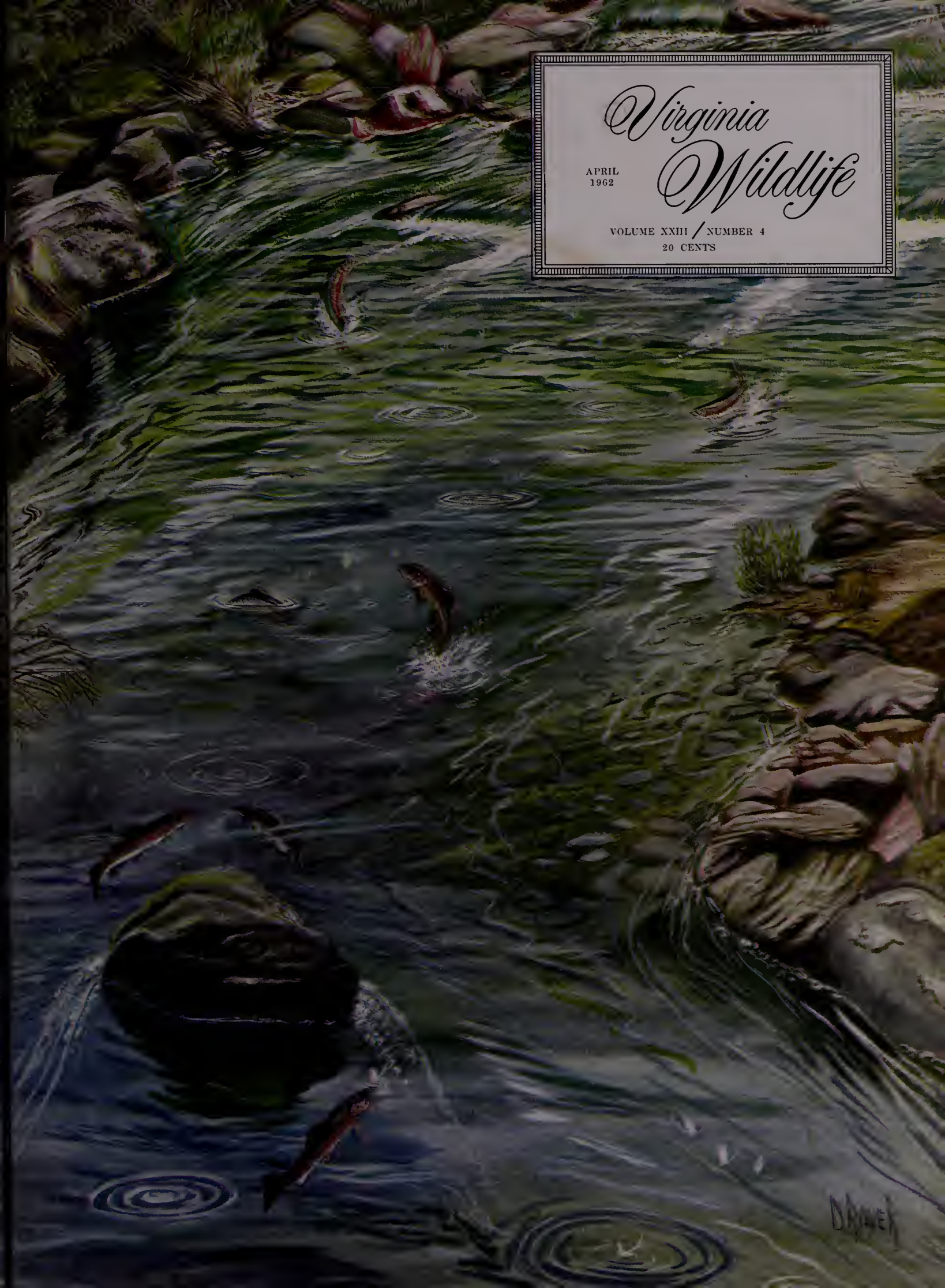


Virginia Wildlife

APRIL
1962

VOLUME XXIII / NUMBER 4
20 CENTS

Virginia Wildlife

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources and to the Betterment of Outdoor Recreation in Virginia

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, *Richmond 13, Virginia*

COMMONWEALTH OF VIRGINIA

ALBERTIS S. HARRISON, JR., Governor

Commission of Game and Inland Fisheries

COMMISSIONERS

BEVERLEY W. STRAS, JR., *Chairman* . . . Tazewell
J. C. AARON . . . . . Martinsville
H. G. BAUSERMAN, SR. . . . . Arlington
A. REE ELLIS . . . . . Waynesboro
R. R. GUEST . . . . . King George
J. C. JOHNSON . . . . . Newport News
DR. E. C. NETTLES . . . . . Wakefield
I. T. WALKE, JR. . . . . Norfolk
T. D. WATKINS . . . . . Midlothian
HOLMAN WILLIS, JR. . . . . Roanoke

ADMINISTRATIVE OFFICERS

CHESTER F. PHELPS, *Executive Director*
JOHN H. MCLAUGHLIN . . . . . *Staff Assistant*
RICHARD H. CROSS, JR. . . . *Chief, Game Division*
ROBERT G. MARTIN . . . . *Chief, Fish Division*
LILLIAN B. LAYNE . . . . *Chief, Fiscal Division*
M. RUPERT CUTLER . . . *Chief, Education Division*
WEBB MIDYETTE . *Chief, Law Enforcement Division*

PUBLICATION OFFICE: Commission of Game and Inland Fisheries, 7 North Second St., Richmond 13, Va.

M. RUPERT CUTLER . . . . . *Editor*
LEON G. KESTELOO . . . . . *Photographer*
FLORENCE B. WADE . . . . . *Circulation*

APRIL

Volume XXIII/Number 4

IN THIS ISSUE **PAGE**

Editorial: Our Spring Gobbler Season Rationale..... 3
Trout Program Report..... 4
Summary of 1962 Virginia Fishing Regulations..... 5
The Future of the Potomac River Basin..... 6
River Bend Dam—"Big Dam Foolishness"..... 11
River Bend Dam—"Potential Recreation Asset"..... 12
Conservationgram 13
A Practical Start to Fly Fishing..... 15
The Cardinal and the Dogwood..... 17
Fish Management: Stocking..... 19
Ready Your Boat For Summer Fun..... 21
Bird of the Month: The Bluebird..... 22
Youth Afield 23
The Drumming Log..... 24
On The Waterfront 25
Letters 26
Know These Fish..... 28

COVER: Dozens of streams throughout western Virginia resemble the one pictured on our cover this month—loaded with rainbow trout and ready to provide plenty of action for fishermen on "opening day," April 7. Painting by Duane Raver of Cary, North Carolina.

SUBSCRIPTIONS: One year, $1.50; three years, $3.50. Give check or money order, made payable to the Treasurer of Virginia, to local game commission employee or send to Commission of Game and Inland Fisheries, P. O. Box 1642, Richmond 13, Virginia.

VIRGINIA WILDLIFE is published monthly at Richmond 13, Virginia, by the Commission of Game and Inland Fisheries, 7 North Second Street. All magazine subscriptions, change of address notices, and inquiries should be sent to Box 1642, Richmond. The editorial office gratefully receives for publication news items, articles, photographs, and sketches of good quality which deal with Virginia's soils, water, forests, and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE. Clearances must be made with photographers or artists to reproduce illustrations.

Second-class postage paid at Richmond, Va.

EDITORIAL

Our Spring Gobbler Season Rationale

COMMENTS made by interested sportsmen on the subject of Virginia's spring season on bearded turkeys at the Game Commission meeting in February and in letters to the editors of the State's newspapers since that time indicate that many good folks are still in the dark as to why their wildlife conservation agency has proposed this rather unique liberalization of our turkey hunting regulations.

As many of you will recall, we broached this subject in three articles in VIRGINIA WILDLIFE in 1961. In March, there was "A Biologist's View of a Spring Hunting Season on Turkey Gobblers" by Wayne F. Colin; in April, our readers were introduced to "Techniques of Spring Turkey Hunting" by G. K. Lightsey; and in August, summarizing the results of Virginia's first spring gobbler season, we published "Tom Turkey Tests" by our own C. H. "Kit" Shaffer. Our first recommendation to those of you who view askance this departure from the norm in hunting seasons is to dig out of the file these back issues and give them another reading. They contain much more information than we can summarize here.

Our second recommendation is that you give spring gobbler hunting a try and then come to your own conclusions. Take down that trusty double-barrel, grab a few shells—number six or four bird shot—tune up your turkey call, and head for the woods in one of the open areas during the April 23-28 season. (These include the entire counties of Amelia, Chesterfield, Nottoway, and Powhatan as well as Camps Pickett and A. P. Hill and the Gathright, Goshen, and Little North Mountain wildlife management areas.) Get into turkey territory in the wee small hours, hunker down in a makeshift blind, and try to call up an old tom. You'll see what an enjoyable experience it is . . . and just how difficult it is to take turkeys in this manner.

Outdoor Life Field Editor Charles Elliott has a fine spring gobbler hunting tale in the March issue of that magazine. To quote him briefly: "The time was early spring. To me, this is one of the most stimulating hunt seasons of the year. The forest floor is bright with new life, and the vitality of the forest and its creatures seem on the verge of erupting into some unbelievable phantasy of sound and color." Later in the article: "During my hunt for the long-bearded one I learned all over again that to kill a large wild gobbler is perhaps the greatest challenge in hunting. It doesn't take the courage needed to coldly face a charging grizzly or the stamina necessary to climb for a mountain goat or trophy ram. But nothing requires more in woodsmanship, patience, and know-how than gobbler hunting."

The facts are these: The Game Commission's number-one objective is to permit sportsmen the maximum amount of recreation the State's wildlife resource can provide on a sustained-yield basis. While there is no known biological need for a spring gobbler season, neither is there any known biological objection to a reasonable spring removal of gobblers. Wild gobblers, like buck deer, are polygamous. A "gobblers only" law during the spring breeding season should have no more effect upon our turkey populations than the "buck law" during the fall breeding season has had upon deer populations.

Nest interference is not an important factor in such seasons. Last spring *none* of our gobbler hunters reported seeing the first nest. Even under normal conditions, all hens do not hatch eggs at the same time. If they did, catastrophes such as those caused by cold rainy spells could nearly wipe out the young.

In states where the spring season is traditional (Alabama has had one for 30 years) the average hunter reportedly would sooner shoot his best dog than a turkey hen. Hens rarely leave their nests while nesting, and then usually in late afternoon for food and water. Our season ends at 10:00 a.m. each day.

Gobblers are easily identified in the spring by their size, beards, and brightly colored heads. And Virginia hunters who bagged gobblers during the 1961 spring season reported that the birds were as good to eat or better than fall birds.

Perhaps most important is the simple fact that it's impossible to learn anything by starting an experiment one year and dropping it the next. Our biologists and wardens are keeping close tabs on the results of these seasons, and they need a few seasons to evaluate their worth and effect.—M. R. C.

LETTERS

Advocates Listening To Biologists

PLEASE accept my thanks for the fine job you are doing to alert Virginians to the conservation problems of our state. I strongly support your position on the proposed Gathright dam, and I will do everything I can to generate opposition among my friends, neighbors and representatives to this threat to our dwindling natural areas. I also agree with proposed regulatory and legislative changes to bring about uniform bag limits, seasons, and other measures essential to wise use of our wildlife resources. When people need legal, medical, or other professional advice or technical assistance they turn to lawyers, doctors, and other specialists. Thus it seems logical to me that we would turn to competent biologists for advice on conservation matters in the wildlife field.

On a more personal note, I would like to express my appreciation for the decision to abandon the closed season on bass fishing west of the Blue Ridge. This will give me many more opportunities to fish my favorite areas on the south fork of the Shenandoah.

Paul E. Oberst
Vienna, Virginia

Re: The "Snow Law"

WELL, here it is snowing again in Augusta County. This makes the sixth snow since the general hunting season came in and I am writing this to recommend that the so-called "Snow Law" prohibiting the hunting of any game birds or animals (except deer, bear, and migratory birds) in the snow be abolished.

I have three sons, and we spent $24 this season for hunting licenses and have been able to hunt only three weekends because of the existing "Snow Law."

I have been hunting for 33 years and until 10 years ago lived in West Virginia where hunting is permitted in the snow, and I can see very little difference in the amount of game in the two states.

I have hunted all kinds of game birds and animals in the snow and find the hunter does not have much advantage. True, he can track to a certain extent, but not many hunters will do this extra walking. Also, when the snow is on the ground, in most cases all game seeks better cover for their own protection and I have found from long experience that the game is more wary and keeps a sharper lookout when snow is on the ground than any other time.

I know that the "Snow Law" causes a lot of hunters to violate the law, which would not happen if we did not have such a law.

I can see very little good it does as a certain area will afford food for just so many birds or animals, which, if not harvested, will either leave or die. I do not believe many hunters will take advantage of the snow when it is deep or when game is in trouble; therefore I, as a sportsman and taxpayer, urge you to remove this useless and senseless law from the books.

N. R. Napier
Swoope, Virginia

(Continued on page 26)

Virginia's trout season opens April 7. Here is your fish division's

Trout Program Report

By ROBERT G. MARTIN
Chief, Fish Division

THE 1962 trout season opens at 12 o'clock noon, Saturday, April 7. Approximately 433,000 brook, brown and rainbow trout have been stocked for the occasion in some 200 streams in 39 Virginia counties including streams on the George Washington and Jefferson national forests. An additional 268,000 trout will be stocked during the May closed periods and will be followed by 81,000 more in June for a season's total of almost three-quarters of a million trout. Commission-owned rearing stations will account for 75 percent of this total with the remainder coming from U. S. Fish and Wildlife Service installations. The yearling trout from Commission-owned trout stations will be sweetened with approximately 10 percent two-year-old trout during the pre-season and May stocking periods. These larger fish will be mixed in all shipments instead of being reserved for larger streams only as was the case last year.

While the size of these figures may appear impressive, the problems associated with mapping a balanced trout fishing program are no less so. One of the major problems is designing a program which satisfies the wide variety of tastes which are found in the trout fishing public. About 95 percent of Virginia's trout fishermen go "all out" for stocked fish and put-and-take fishing. However, we can't ignore the remaining five percent which we may call, for want of a better name, the "native" fishermen. As the name implies, this group expresses little interest in hatchery-reared fish and concentrates on the native fish found in small headwater streams.

Although the total acreage of native streams is small when compared with the potential number of trout fishermen, fortunately the streams are well distributed throughout the trout range in Virginia. The rough terrain and the small average size of the native (a nine-incher is considered better than average) also serves to limit the number of anglers interested in native fishing.

The brook trout is actually the only trout species native to these streams, but the introduced rainbow has established reproducing populations in many of the same streams. There is also a good possibility that self-sustaining populations of brown trout can be established through future introductions.

Since Virginia geography and climate preclude any substantial increase in size or productivity of such waters, increased fishing opportunity must come from greater utilization of the existing waters. Special regulations, improved access, and better publicity are some of the most promising ways of accomplishing this. Habitat improvement holds some hope of increasing the future productive potential of these streams, but the results of preliminary studies are not overly encouraging. Further research along these lines is planned. A complete survey of all native trout waters is under way and a list of these waters will be prepared for distribution to interested fishermen.

The fish-for-fun area established last year in cooperation with the Shenandoah National Park on the Rapidan River in Madison County is one example of getting more fishing pleasure from restricted trout stocks. Only artificial baits with barbless hooks are permitted in this area and all fish caught are to be returned to the stream immediately. An existing native brook trout population was augmented with approximately 300 adult hatchery-reared rainbow trout. This stream and its major tributary, the Staunton River, provided almost 600 fishing trips during the year. The trout fared very well with few deaths reported. Native brook trout provided over 54 percent of the 1,902 trout hooked. Population samples obtained by electro-seining during the summer revealed that the native brook-trout population was normal in spite of the fishing activity. It is hoped that the fish-for-fun regulation will result in a build-up of larger sized brook trout in future years. Plans have been made to add additional fish-for-fun areas in other sections of the state where the demand exists and suitable waters can be located.

Although the number of fish-for-fun addicts is expected to increase considerably in future years due to the increased fishing pressure on our limited trout streams, the greatest number of the trout-fishing public at the present time depend on stocked streams and fish that they can keep. These anglers comprise well over 95 percent of the estimated 75,000 trout anglers in Virginia. Dingell-Johnson studies reveal that 97 percent of these anglers fishing put-and-take waters prefer live bait over artificial, indicating that they are playing for keeps. The demands on hatchery facilities

Commission Photo by Harrison

Almost half a million trout will be stocked in Virginia waters this spring prior to the opening of the season on April 7. Additional thousands will be stocked later.

A fishing license is required to take or attempt to take any freshwater fish. Persons not required to have a fishing license are: (1) residents under 16 years of age or 70 years of age and over; (2) landowners, their husband or wife and children, and tenants who reside on the property and have the written permission of the landowner, on the landowner's property only; and (3) those persons fishing as guests in private ponds individually owned.

OPEN SEASONS AND CREEL LIMITS

GAME SPECIES*	CREEL LIMIT	OPEN SEASONS
Largemouth, Smallmouth, Spotted, Striped Bass	8 daily in aggregate	CONTINUOUS OPEN SEASON STATEWIDE
Pickerel, Walleye	8 daily	CONTINUOUS OPEN SEASON STATEWIDE
Crappie, Rock Bass, Bluegill, other Sunfish	25 daily in aggregate	CONTINUOUS OPEN SEASON STATEWIDE
White Bass	25 daily	
Brook, Brown and Rainbow Trout**	8 daily in aggregate	In all waters stocked with trout, OPEN SEASON 12:00 NOON APRIL 7-DECEMBER 31 from one hour before sunrise (after opening day) to one hour after sunset daily, with the following exceptions: The season will be closed from May 7 through May 11 in Alleghany, Augusta, Bath, Bland, Botetourt, Buchanan, Craig, Dickenson, Giles, Highland, Lee, Rockbridge, Rockingham, Russell, Scott, Smyth, Tazewell, Washington, Wise and Wythe counties. The season will be closed from May 14 through May 18 in Albemarle, Amherst, Bedford, Carroll, Floyd, Franklin, Frederick, Grayson, Greene, Henry, Madison (except in the Rapidan and Staunton Rivers and their tributaries upstream from a sign at the lower Shenandoah National Park boundary), Montgomery, Nelson, Page, Patrick, Pulaski, Rappahannock, Roanoke, Shenandoah, and Warren counties. These closures do not apply to privately stocked waters. Seines and nets, snagging, feeding of trout, and fishing with more than one rod, one line, and one hook are prohibited in waters stocked with trout. Artificial lures with more than one hook are permitted. Unlawful to fish in a stocked trout stream after the daily creel limit of trout is obtained.

* Unlawful to use game fish of any size for bait.
** Artificial lures only may be used to take trout in Little Stony Creek beginning 330 yards above the Woodstock Water Supply Dam and in Passage Creek above the bridge at the road leading to Smith Creek; see also Shenandoah National Park and Lake Shenandoah exceptions.
No minimum size limit except on trout in Shenandoah National Park (9 inches) and on striped bass statewide (12 inches).

Fishing in inland waters must be by angling with a hook and line or rod and reel, held in the hand.

Any person who fishes on another's property must have the landowner's permission to do so, except on those private trout streams along which signs have been posted indicating the waters which are open to public fishing.

Sunday fishing is prohibited in the counties of Alleghany, Bath, Bland, Botetourt (except James River and Carvins Cove), Craig, Giles (except Mountain Lake and New River), Highland, Rockbridge, Surry (in Blackwater River and Cypress Swamp) and in Silver Lake in Rockingham. Sunday fishing in Augusta County requires the written permission of the landowner.

Commission Controlled Ponds: Fishing hours are one hour before sunrise to one hour after sunset; gasoline motors and seining of minnows, prohibited; overnight camping is not permitted. Creel and size limits are as posted at each lake.

Shenandoah National Park: Open to trout fishing only, from the opening of the statewide trout season to one hour after sunset on October 15 and from one hour before sunrise to one hour after sunset on intervening days. Natural bait is prohibited; only artificial lures with single hooks may be used; minimum size limit 9 inches. "FISH FOR FUN" exception: It is lawful to fish for trout using only artificial lures with single BARBLESS hooks in the Rapidan and Staunton Rivers and their tributaries up stream from a sign at the lower Shenandoah National Park boundary in Madison County. The season: From the opening of the statewide trout season through October 15. All fish caught in these waters must be immediately returned to the water. No fish may be in possession at any time in this area.

John H. Kerr Reservoir: State resident and nonresident fishing licenses legally obtained from the duly authorized representative of either the Virginia Commission of Game and Inland Fisheries or the North Carolina Wildlife Resources Commission shall be accepted as legal authority to fish only by means of rod and reel or hook and line in the waters of John H. Kerr Reservoir (Buggs Island Lake) lying east of U. S. Route 15 highway bridge near Clarksville, Virginia to the reservoir dam, including all tributary waters lying in Virginia which are accessible by boat from the main body of the reservoir, or from sub-impoundments lying east of the said highway bridge.

For details, write Box 1642, Richmond 13, Virginia for Digest A-6.

posed by this vast army of anglers is overwhelming. For example, in spite of the large number of trout to be stocked from the state-operated hatcheries this year, this stocking will provide less than eight trout per angler for the entire season! While stocking more trout would appear to improve the situation, fiscal facts make this course of treatment inadvisable under current conditions.

For example, even though improved hatchery management practices and greater emphasis upon stocking yearling trout have reduced the cost per trout by half, current trout-rearing expenditures still exceed revenue attributable to the trout program. Every effort is being made to effect further economies and to place the trout program on a financially solvent basis.

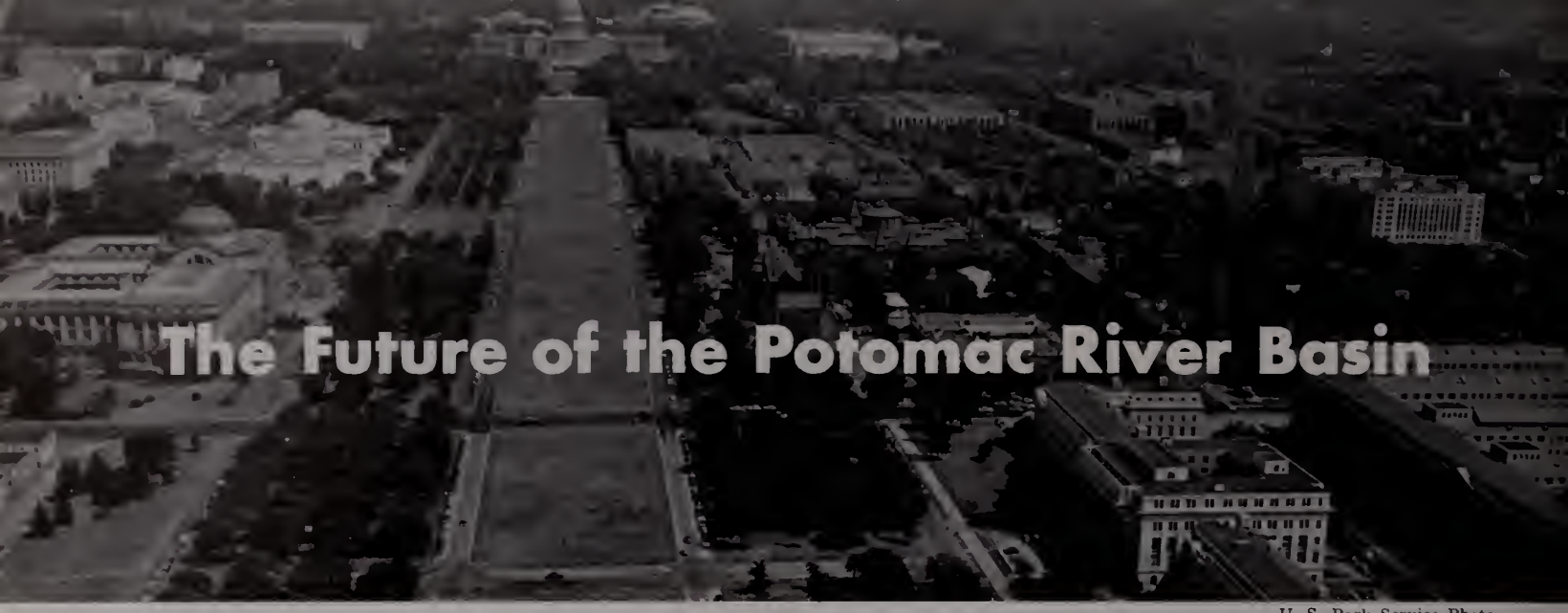
The cost factor could be partially overcome and at the same time offer an expanded stocking program by the adoption of a pay-as-you-go program on a limited number of trout areas. These areas would be "kept full" of stocked fish liberated throughout the season as fishing pressure dictated. A daily fee of $1.00 would be charged for the privilege of fishing so that those anglers who wanted their fish "quick and easy" would pay the additional expense of providing them. These areas would of necessity be located on high-quality waters capable of supporting trout on a year-around basis. Highly popular areas similar to these have been successfully operated in two of our neighboring states, North Carolina and Tennessee. It should be emphasized that this proposal would supplement rather than replace the existing statewide put-and-take program.

Another basic problem with the put-and-take program is the fact that the trout are taken early in the season making it imperative that something be done to make them available over a longer period of time. Prior to the adoption of the in-season stocking policy in effect last year, studies indicated that more than 90 percent of these stocked trout were creeled during the opening week. Since evidence obtained last year indicated that in-season stocking was effective in providing fishing over a longer period of time, the policy will be continued this year. It appears that the total number of fishing days can be expanded in this way with only a slight drop in the average daily catch.

A glimmer of hope in the serious problem of producing higher quality put-and-take fishing on a limited budget is the introduction of the brown trout. These fish are not as easily caught on opening day as the brook or rainbow, and releases made for the first time last year appeared to have benefit in spreading fishing over a longer period of time.

It is too early to fully evaluate these releases, but results look promising to date. Additional brown trout will be stocked this year, depending on their availability from federal hatcheries, and a minimum of 40,000 brownies will be stocked during the 1963 season.

In spite of its drawbacks, put-and-take trout fishing will probably be with us for a long time to come, since most of our easily accessible trout streams do not have the productive capacity to cope with the tremendous increase in angling pressure. With the limited revenues currently available, the development of pay-as-you-go trout management areas offers the only fiscally sound solution for an expanded put-and-take program. For those anglers who prefer the thrill of fishing for natives at the expense of a full take-home creel, we believe an extension of the fish-for-fun philosophy will fill the bill. Better utilization of brown trout and further refinement of existing stocking techniques should improve the standard put-and-take program. Research will be given high priority at both the hatchery level to improve the quality and reduce production costs of stocked trout, and in the field to provide the answers for improving trout fishing opportunity for the ever growing number of trout fishermen in Virginia.



The Future of the Potomac River Basin

U. S. Park Service Photo

The population of the Nation's Capital, together with that of the rest of the Potomac River Basin, is growing faster than the national average, and its water needs are growing with the population.

By COLONEL WARREN R. JOHNSON
U. S. Army District Engineer, Baltimore, Maryland

As we look about us we can readily see that ours is a constantly expanding world with new enterprises, more people and more homes. But because the basic geographical features of the land do not change, the planners, engineers and economists must fit the growing economy and population into the physical entity where people live and work.

An important part of this environment is water—water in quantity, with the quality, at the time, and in the place we need it.

The Potomac River, one of the major streams in the Eastern United States, has been an essential source of drinking water for more than a century. Concern about the river's ability to meet adequately the water needs of the rapidly growing Basin population dates from the drought of 1930. In addition to such periods of drought, the Potomac has a long history of floods. The worst flood on record occurred in 1936.

The Potomac also has a shorter but more disturbing history of pollution. Recently, the entire country has become concerned with the increased use of its rivers for waste disposal which decreases the amount of fresh water left in the streams to meet expanding water supply requirements. The surface of the Potomac truly reflects the seriousness of our Nation's water problems.

The U. S. Army Corps of Engineers is now nearing the end of a comprehensive study of water resources problems in the Potomac River Basin which was authorized by resolutions of the United States Senate Committee on Public Works in 1956 and 1959. Congress directed the preparation of a river basin plan for water supply, water quality control, flood control and recreation. In June 1962 the Baltimore Engineer District will complete the study. The final report will include a recommendation for a comprehensive plan to guide the orderly development of Potomac River water resources during the next 50 years.

In order to take advantage of the experience of other federal agencies who deal with water resource problems every day, we requested and have received the full cooperation of the Department of Agriculture (Soil Conservation Service, Economic Research Service, Forest Service), the Department of Commerce (Office of Business Economics, Bureau of Public Roads, Bureau of Census), the Department of Health, Education and Welfare (Public Health Service), and the Department of the Interior (Geological Survey, Fish and Wildlife Service, National Park Service). Other agencies contributed to a lesser degree.

Much help was received from the State of Maryland and West Virginia, the Commonwealths of Virginia and Pennsylvania, the District of Columbia, and from such organizations as the National Capitol Regional Planning Council and the Interstate Commission on the Potomac River Basin. These non-federal organizations make up the nucleus of an advisory group that has met at intervals with the Corps of Engineers to review the progress of the study and to coordinate matters pertaining to the investigation.

The Potomac River's drainage area of 14,670 square miles includes 5,723 square miles in Virginia. Its largest tributary, the Shenandoah River, rises in the vicinity of Waynesboro and Staunton and meets the Potmac's main stem at Harper's Ferry, West Virginia. From this juncture the Potomac forms the boundary between Virginia and Maryland.

To determine any future water requirements we have to know something about the growth of an area's economy and population, because the need for water depends upon the volume and types of economic activity and the size of the population. This kind of information was prepared by the

Corps of Engineers Photo

At right and on the adjoining page are pictured two Corps of Engineers installations in Virginia. At right is 220-foot-high Philpott Dam, near Bassett, which backs up a 2,880-acre reservoir. Shown on page seven is 189-foot-high John H. Kerr Dam, near Boydton, which impounds 48,900-acre Buggs Island Lake.

Department of Census who gave us estimates on Potomac River Basin development for the next 50 years.

Their information shows that the Potomac River Basin economy and population are growing at a faster rate than that of the Nation as a whole. Potomac Basin area employment has been rising faster than the national average since 1930 and will continue to do so over the next 50 years. Increases in the area's economy, with respect to personal income, have also stayed ahead of the national average and should continue to do so. The largest population increase is reflected in the metropolitan area of Washington, but since the District of Columbia population is expected to remain fairly constant, most of the growth in the metropolitan area will be found in the Virginia and Maryland areas that form the suburbs of Washington. Very significant increases are projected also in many of the upstream areas.

Now just what does the growth in population, employment, and income mean in terms of water? It means more water for municipalities, not only for more people, but more per person for a higher living standard; it means more water for industry, not only equivalent to the employment, but equivalent to the employment multiplied by the growth of each employee's productivity; and finally, it means more leisure time which increases the demand for recreation in which water also plays a major role.

Next, we asked the Public Health Service how much more water will be needed by the year 2010. We were interested in the volume of water needed over and above the river's dependable flows, to include the quantities needed to insure water of good quality throughout the Basin. Water quality control is a comparatively new term. It means more than pollution abatement through treatment of waste—it presupposes adequate direct waste control as a base, then goes beyond that by providing extra quantities of water to further purify the river by Nature's own means. The calculated volumes also would have to cover the municipal and industrial water as well as the quantity for water quality control. The Public Health Service states that the requirement in the upper basin will be slightly more than one

Corps of Engineers Photo

billion gallons per day. The requirement in the metropolitan area will be approximately three billion gallons per day.

As this water moves downstream much of it will have to be used over and over again. But it can be reused in this way only if its quality is preserved. Each community will have to take steps to help preserve the quality or the quantity required on every tributary. If all the upstream tributaries are developed in order to answer both their quality and quantity problems, the additional flow needed at the Washington Metropolitan Area will be reduced from three million gallons per day to two million gallons per day.

Although some sections will need additional amounts of water, many Potomac River Basin communities will continue to be faced with the flood problem. While some areas are exposed to flash floods during and after sudden local thunder storms, most of the larger floods that have occurred in the Basin—in 1924, 1936, 1942 and 1949—have occurred in the lower valleys and have caused heavy property damage and losses of life. The worst flood on record occurred in 1936 and caused damages then estimated at $12.6 million. If an identical flood would strike now, the damages would exceed $20,000,000 because of the additional growth and higher prices in the area today. Flood damages throughout the river basin average out to about $4,300,000 annually.

We believe that river basin planning must do more than provide for man's physical survival. Keeping water faucets flowing and the wheels of industry turning and controlling floods are musts—but they are not enough. Man's desires must be considered as well as his basic needs.

Water and recreation are inseparable twins. As populations grow and industrial techniques improve, there will be more people with more free time to spend outdoors. After studying the records of the recreation areas at the Corps of Engineers reservoirs throughout the nation, we learned that public use of these areas has climbed from 16,000,000 visitor-days in 1950 to 109,000,000 visitor-days in 1960.

These findings are borne out in statistics of the National Park Service which show that the public demand for water-based recreation areas is always greater than the number of sites that can be developed.

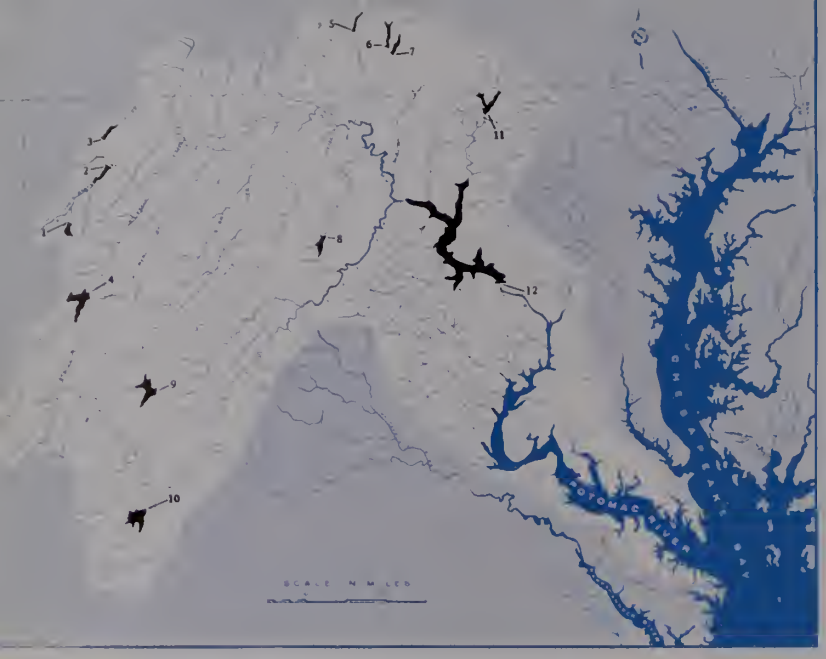
Water needs and water uses cannot be properly studied without paying equal attention to the land where the water comes from and through which it flows. Such things as measures for land treatment, forest management, flood plain zoning, and preservation of fish and wildlife resources are also being considered in our study. It is only by including these considerations as well as the other more critical needs that we can propose a comprehensive and well-balanced development program for the Potomac River Basin.

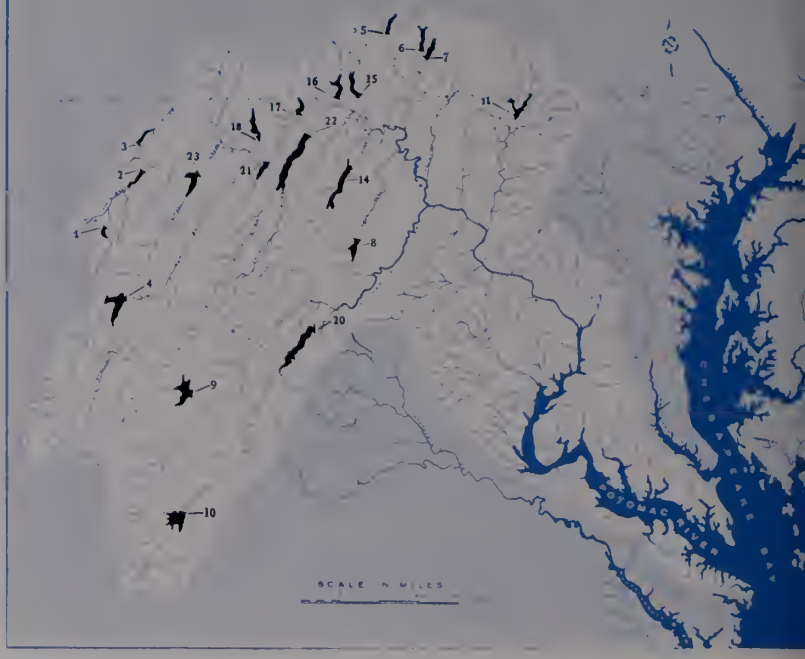
The next major step in our investigation was to find out how all, or most, of these needs could be satisfied. For conserving the water supply and controlling water quality we looked into the possibilities of developing ground water resources (water from wells), diverting water from neighboring river basins, desalting sea water, reclaiming fresh water from sewage, and regulating river flows by reservoirs. These investigations presuppose maximum treatment of wastes before they are discharged into any stream in the Basin.

After analyzing the most up-to-date techniques for reclaiming water resources, our study showed that most methods are very expensive, and that some require huge sources of energy to do the work. Diversion from neighboring river systems is not economical, and these other river basins face the same problems as the Potomac. As a result we feel that the most feasible answer to Potomac water problems is to regulate river flows by using storage reservoirs. If such reservoirs are put to multiple purpose use, they can satisfy most, if not all, of the water needs of the basin.

At this point we had to determine what combinations of small and major reservoirs would supply the best answers to the problems. We have attempted to take into account the various points of view that result from different social values among the residents of a major river basin. In this effort our approach was theoretically simple: The plans had to provide first for local upstream needs by using the most economical methods and the most efficient reservoir sites. Secondly, the flow from these reservoirs would be funneled

(Continued on page 10)





MAIN STEM AND UPPER BASIN PLAN

The total cost of this plan would be about $319 million for the 12 reservoirs and an additional $106 million for 409 small headwater structures which are not shown. Annual monetary benefits would average out to $32 million.

These 12 reservoirs would have a combined water surface area of about 48,000 acres covering about 41,000 acres of land. To provide for development of recreational features, an additional 73,000 acres should be acquired.

Analysis By Sites

1. Stony River, near U. S. 50 highway bridge
   Purposes: Flood control, low flow augmentation, recreation.
   Advantages: Sparsely settled area requiring no extensive relocations; low cost of land; fairly good water quality; good recreation.
   Disadvantages: Will not satisfy immediate water needs, and is therefore deferred in construction schedule.
2. North Branch at Bloomington
   Purposes: Flood control, low flow augmentation, recreation.
   Advantages: Will fulfill immediate needs in the North Branch. Reasonable cost of acquisition; land relatively unused for other purposes; fair water quality; good recreation except for fishing.
   Disadvantages: Large railroad relocation cost; no fishing capability due to acid mine water.
3. Savage River above existing reservoir
   Purposes: Low flow augmentation and recreation.
   Advantages: Excellent water quality; reasonable acquisition cost; will greatly improve recreation potential of existing Savage River reservoir by minimizing drawdown; excellent reserve site for future municipal water supplies.
4. South Branch above Petersburg, West Virginia
   Purposes: Flood control, low flow augmentation, recreation.
   Advantages: Affords close control of floods in the Petersburg area; large storage capacity at relatively low cost; high recreation potential including enhancement of stream fishery below reservoir.
   Disadvantages: Some relocation involved; some existing recreation would be eliminated.
5.; 6.; and 7. Conococheague Creek Valley, Pennsylvania
5. West Branch
6. Back Creek
7. Conococheague Creek
   Purposes: Low flow augmentation and recreation.
   Advantages: All of these reservoirs have high recreation potential.
   Disadvantages: Relatively high acquisition cost for all three; sewage effluents from Chambersburg, Pennsylvania, would eventually have to be piped around one reservoir (7) to maintain good quality of water in reservoir.
8. Opequon Creek near Winchester, Virginia
   Purposes: Low flow augmentation and recreation.
   Advantages: Fairly good recreation potential.
   Disadvantages: Considerable relocation required; sewage effluent from Winchester would eventually have to be transported around reservoir to preserve water quality.
9. North Fork Shenandoah at Brock's Gap
   Purposes: Low flow augmentation and recreation.
   Advantages: Good recreation potential; moderate cost.

(Continued at right)

UPPER BASIN PLAN

This plan consists of 20 reservoirs, including all of those mentioned in the previous plans except for the three largest: Riverbend, lower Shenandoah, and lower South Branch. Two reservoirs would be added.

If the Upper Basin Plan is adopted there could be no further development of the Potomac to meet the needs of the more distant future—unless steps were taken to curtail encroachment on one or more of the larger sites excluded from this plan.

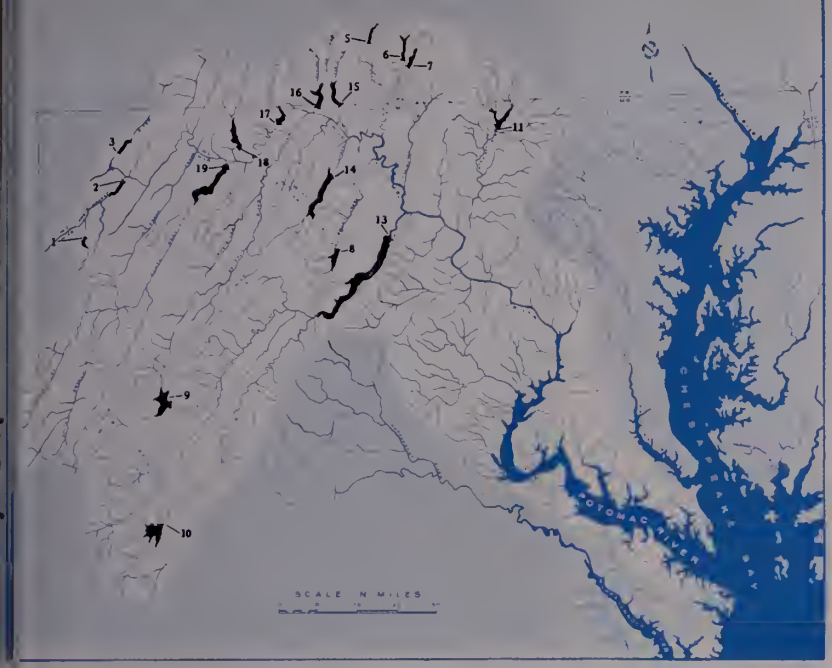
The total cost of the Upper Basin Plan would be about $400 million in addition to the $106 million for the small headwater structures. The recreation potential is figured at 14 million visitor-days per year. The monetary benefits would average $32 million yearly.

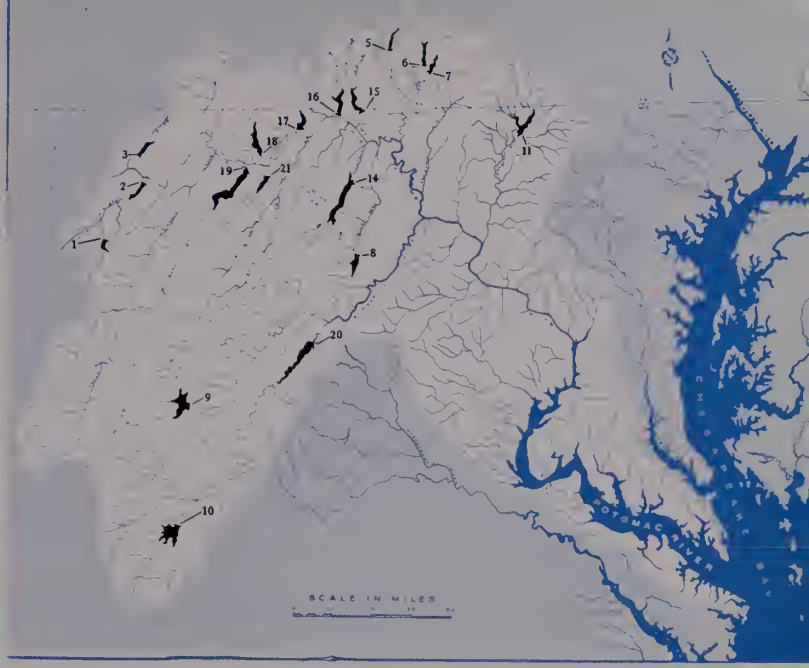
Analysis By Sites

22. Cacapon River, West Virginia
   Purposes: Low flow augmentation, recreation, some flood control.
   Advantages: Few relocations required; provides for large amount of storage at low cost; high recreation potential.
   Disadvantages: Would flood a unique and scenic natural stream valley; present types of recreational use would be lost; location distant from water needs.
23. Patterson Creek, West Virginia
   Purposes: Low flow augmentation and recreation.
   Advantages: Fair accessibility; nearness to Cumberland area adds to its recreation potential.
   Disadvantages: Considerable loss of agricultural land; provides no local water needs.

Disadvantages: Loss of agricultural land in Brock's Gap valley; considerable relocation required.

10. Middle River below Staunton, Virginia
   Purposes: Low flow augmentation and recreation.
   Advantages: High recreation potential; best location to supply upper Shenandoah valley water needs; water could be piped to Waynesboro area where needs cannot otherwise be met; reasonable cost.
   Disadvantages: Considerable relocation required; some losses of agricultural land, though not severe.
11. Monocacy River above Frederick, Maryland
   Purposes: Low flow augmentation and recreation.
   Advantages: Relatively high recreation potential.
   Disadvantages: Appreciable losses of agricultural lands.
12. Main Stem Potomac at River Bend.
   Purposes: Flood control, low flow augmentation, recreation.
   Advantages: Excellent control of both low flows and flood stages of river for the Washington Metropolitan Area; provides the most storage of any site in the Basin at the least unit cost; provides the most flood control for Washington of any site in the Basin; outstanding recreation potential; because of large storage capacity and topographic configuration, will permit substantial water releases with relatively low fluctuation of pool level; deposition of silt provides incidental aesthetic benefits to Washington.
   Disadvantages: Considerable relocations required; extensive social and economic impacts due to high degree of development in the reservoir area; would flood about 35 miles of the C & O Canal.





MAJOR TRIBUTARY PLAN

The Major Tributary Plan would exclude any reservoir on the main stem of the Potomac and would also omit the reservoir on the upper South Branch above Petersburg, West Virginia. To make up for this loss of storage, seven other reservoir sites are added, making a total of 17 reservoirs in the plan.

The Major Tributary Plan fulfills, to the maximum extent possible, all water requirements of the Basin consistent with ruling out the River Bend site or any other reservoir site on the Potomac's main stem. The Petersburg, West Virginia, site is eliminated in this plan because the omission of River Bend necessitates the substitution of a larger site on the lower South Branch.

The total cost of this plan exclusive of the $106 million for the small headwater structures would be approximately $378 million ($59 million more than the Main Stem and Upper Basin Plan). Annual monetary benefits for the entire plan would average out to about $32 million.

This plan would flood more acres of land than the Main Stem and Upper Basin plan, and would have less capacity for the control of floods. On the other hand, the Major Tributary Plan has the largest recreation potential of any of the four basic plans: 15 million visitor-days per year as against about 14 in the Main Stem Plan. Also, under this plan, the C & O Canal would remain undisturbed. Location of the reservoirs are shown on Figure 2.

Analysis By Sites

Sites 1, 2, 3, 5, 6, 7, 8, 9, 10 and 11 were described in the Main Stem and Upper Basin Plan. The following sites have been added to make up for the loss of sites 4 and 12:

13. Shenandoah River near Charles Town, West Virginia

Purposes: Flood control, flow augmentation, recreation.

Advantages: Relatively high flood control benefits; reasonable cost; excellent recreation potential.

Disadvantages: Considerable relocation required; loss of some agricultural land.

14. Back Creek, West Virginia and Virginia

Purposes: Low flow augmentation and recreation.

Advantages: Excellent recreation and fishing potential; only moderate relocations required; moderate cost per unit of storage; high potential for circumferential developments.

Disadvantages: Not needed for local water use.

15. Licking Creek, Pennsylvania

Purposes: Low flow augmentation and recreation.

Advantages: Attractive site with good recreation potential; relatively low cost per unit of storage.

Disadvantages: None, except that location is rather distant from nearest water needs.

16. Tonoloway Creek, Maryland and Pennsylvania

Purposes: Low flow regulation and recreation.

Advantages: Easy accessibility gives this site an excellent recreation potential.

Disadvantages: Not required for any local water needs; requires relocation of Interstate Highway No. 70.

(Continued at right)

ALTERNATIVE MAJOR TRIBUTARY PLAN

This plan is quite similar to the Major Tributary Plan, the significant differences being the elimination of the reservoir on the lower Shenandoah, shifting of the flood control features of that reservoir to the one on the South Fork, Shenandoah above Front Royal, and substituting two reservoirs—one on the South Fork of the Shenandoah above Front Royal, and the other of Little Cacapon River, West Virginia, making a total of 18 reservoirs instead of 17.

The total cost of the Alternative Major Tributary Plan would be about $372 million, in addition to the $106 million for the small headwater structures. Monetary benefits would average about $31 million yearly. The recreation potential of this plan is figured at about 13 million visitor-days per year.

Other general advantages and disadvantages are similar to those of the Major Tributary Plan.

Analysis By Sites

20. South Fork Shenandoah above Front Royal

Purposes: Low flow augmentation, recreation, flood control.

Advantages: Location between George Washington National Forest and Shenandoah National Park gives this reservoir a high recreation potential; considerable storage at relatively low cost; relatively little agricultural land flooded.

Disadvantages: Not near areas of water needs; considerable relocations required; elimination of existing recreation; loss of a particularly valuable stream fishery.

21. Little Cacapon River, West Virginia

Purposes: Low flow augmentation and recreation.

Advantages: Little relocation required; fair recreation potential.

Disadvantages: Small contribution to Basin plan; relatively high cost; location remote from where water is needed.

---

17. Sideling Hill Creek, Maryland

Purposes: Low flow augmentation and recreation.

Advantages: Little relocation required; fair recreation potential; good scenic advantages.

Disadvantages: Contributes little to Basin plan; relatively high cost of storage; location remote from water needs.

18. Town Creek, Maryland

Purposes: Low flow regulation and recreation.

Advantages: Relatively low cost; good recreation potential; reservoir would provide better fishing than the natural stream.

Disadvantages: Relatively small contribution to the overall plan. though the increment will be needed for the Washington area in the absence of a reservoir on the main Potomac.

19. South Branch near Springfield, West Virginia

Purposes: Low flow augmentation, recreation.

Advantages: Considerable recreation potential; moderate cost for amount of storage provided.

Disadvantages: Considerable agricultural losses; considerable relocations required.

Source of information on these two pages:
U. S. Army Corps of Engineers

downstream for reuse so that only those additional flows needed downstream, and which are over and above those available from upstream. had to be provided.

The Department of Agriculture determined that although programs for improved land use and land management could yield very large benefits, many local headwater requirements for water supply and flood protection would still remain unsatisfied. Therefore a small-reservoir program was developed for upstream areas. About 2,500 sites which had storage possbilities were selected for study. Detailed information was computed for about 800 of these reservoir sites. A system of 409 small reservoirs (the size usually built under the Watershed Protection Act) was found to be the most economical solution.

Collectively, these reservoirs would cost about $106,000,000. Their purposes would include water supply, water quality control, flood prevention and recreation. These impoundments would pass on to the major tributary streams and to the main river an additional 426,000,000 gallons per day or about 16 percent of the additional flows needed in the river basin.

Additional local needs on the larger tributary streams can be satisfied by 10 reservoirs that would cost another $172,000,000. These water storage facilities would provide an additional flow of 470,000,000 gallons every day—about 17 percent of the water requirements.

The 409 headwater structures and the 10 major reservoirs mentioned will solve all the water needs of the upper basin.

Among the major reservoir sites under consideration are three in the Old Dominion: Opequon Creek near Winchester, North Fork Shenandoah River at Brock's Gap, and Middle River below Staunton. These impoundments would be built for water supply, water quality control and recreation. The remaining 67 per cent of the needs of the Metropolitan Area would be provided by other combinations of reservoirs.

In the Main Stem—Upper Basin plan, one reservoir has an effect on the Commonwealth of Virginia. That is the reservoir at River Bend on the main stem of the Potomac. The outstanding feature of this plan is that the needs of most of the Basin are met by reservoirs located closest to the points of need.

As a possible substitute, a dam could be built on the main stem of the Potomac near Seneca Creek, about four miles above River Bend. This site would maintain substantially the same pool levels and provide similar water supply and water quality control benefits. Its smaller storage capacity and water surface would reduce flood control benefits and some recreation possibilities.

In the Major Tributary Plan, reservoirs are eliminated from the Main Stem to avoid the more populated areas and to preserve the C & O Canal. This plan would include two reservoirs that have part of their water storage pools within the Commonwealth. The larger of these would be on the Shenandoah River and would extend from the vicinity of Kabletown, West Virginia to Front Royal, and would give flood control, water supply, water quality control and recreation benefits. The smaller reservoir would be on Back Creek and only a limited section of the reservoir pool would cover any Virginia land.

The Alternative Major Tributary Plan removes the reservoirs from the main stem of the Potomac and the main stem of the Shenandoah. This plan includes a reservoir on the South Fork Shenandoah River south of Front Royal. In our Upper Basin Plan there would be no other reservoirs constructed in Virginia.

Reservoirs produce big fish. The world's record smallmouth bass (at right), weighing 11 pounds, 15 ounces, was caught in Dale Hollow Reservoir, July 9, 1955, by D. L. Hayes of Leitchfield, Kentucky. The bass measured 27 inches long and was caught by trolling a plug.

Corps of Engineers Photo

The Corps of Engineers is now making an intensive study of all plans and their advantages and disadvantages. (See pages 8 and 9.) The effects on fish and wildlife resources and associated recreational use are being carefully considered in the formulation of the final plan. An evaluation of the proposals shows that each plan would result in increased fishing opportunities from a quantitative standpoint. The improvement of water quality should increase the natural productivity of the streams of the basin. We will recommend that any losses of wildlife habitat should be restored by acquiring lands for wildlife management.

No matter what combination of reservoirs is finally recommended, we must bear in mind that the water needs in the Potomac River Basin will continue to grow.

Besides recommending the construction of impoundments which are necessary to meet the needs of the present century, we will also recommend the preservation of some of the other better reservoir sites. This does not mean that these sites would be removed from all beneficial human use. Instead, some sort of state federal controls would be required to prevent the intrusion of large industries, major transportation facilities, or intense residential developments which could prevent the best future use of these areas. Only by planning with these considerations in mind can we discharge our responsibilities to future generations.

Sometime during the spring of 1962, after we have come up with a formal recommendation, we expect to hold public hearings in the States of Virginia, West Virginia, Maryland, and Pennsylvania and in the District of Columbia to give the residents of the Potomac Basin an opportunity to make their views known.

After the report is approved by the Division Engineer, North Atlantic Division, it will be sent to the Board of Engineers for Rivers and Harbors for review. At that time, the public will again be invited to review the findings and recommendations and make their views known to the Board.

Then the Governors of the interested States will be asked for their official comments before the report is transmitted to the U. S. Congress.

Although many people live and work in the Potomac Valley and use its water resources every day, many of them may not be aware of some of the current and future problems that face them. We trust that all of these individuals and organizations will take a close look at the Army Engineers' proposals and then decide on an objective course of action.

Winner of *Field and Stream* magazine's 1961 fishing contest in the Southern Largemouth Bass category was the 15-pound, 3-ounce lunker at left, taken from Philpott Reservoir in Virginia by C. T. Maberry, Jr., of Roanoke on April 15. Lure used was Wallsten Cisco Kid.

Roanoke World Photo

River Bend Dam - - " Big Dam Foolishness "

By JIM LEE
Alexandria, Virginia

AN Army colonel, following a Congressional mandate, faces a difficult decision this year—one that will affect thousands of people in northern Virginia. A proposal will be made to Congress in June to construct one of four possible systems of dams on the Potomac River above Washington.

Which proposal to make is up to Col. Warren R. Johnson, Army engineer for the Baltimore District of the Army Corps of Engineers. Col. Johnson's task isn't enviable. He must put his stamp of approval—and the weight that it carries—on a single proposal that will affect millions of dollars of valuable lands, lands that can never be fully reclaimed once the second largest river in the East inundates them.

And one of the proposals, for the River Bend Dam on the Potomac a few miles above Washington and near historic Great Falls, has already incurred the wrath of many conservationists.

Dam planners figure that the River Bend site would use the last land surface but would provide the most water for the cooking pots and bathtubs of metropolitan Washington. And dam planners point with apparent pride at the potential recreation values of River Bend, which would nick taxpayers for only $425 million.

There are some definite advantages at the River Bend site, but there are definite disadvantages too. The proposed dam, backing up water over some 21,000 land acres, would flood the nearest thing that you'll find to a natural area readily accessible to crowded Washington.

Inundated under the muddy waters of the Potomac—if the dam is built at River Bend—would be about 35 miles of the historic Chesapeake and Ohio Canal. Once a vital transportation link westward from the Chesapeake Bay—and now a favorite recreation area for thousands of space-hungry people—the canal was recently designated a national monument.

The author, a native of Durham, N. C., served as managing editor of *Wildlife in North Carolina*, published by the North Carolina Wildlife Resources Commission, from October 1954 through November 1961.

Politics and war make strange bed-fellows, and so do dam proposals. Rural electrical co-ops have praised the recreational potential of the River Bend dam, asserting that the reservoir would offer recreational opportunities that would replace those flooded. Professional outdoor recreation specialists, on the other hand, such as Dr. Ira N. Gabrielson, president of the Wildlife Management Institute, have soundly denounced the dam.

Dr. Gabrielson apparently smells a rat in the rural electrical cooperatives' efforts to embrace the recreational values of a dam above River Bend. Rural co-ops, of course, are legitimately interested in the cheaper power resulting from federally built hydroelectric facilities.

But Dr. Gabrielson has wondered aloud in a letter to the editor of a Washington newspaper about the co-ops' interest in recreation. He asked if it were possible that the co-ops were "hoping to sell recreation now and then get the people to accept a hydroelectric project at a later date." And the former director of the U. S. Fish and Wildlife Service wondered in the letter if the co-ops really believe that a River Bend dam with power facilities and the mud flats that go with fluctuating water levels would really result in good recreation.

One question that should be evaluated before the proposal for a River Bend dam is accepted is the matter of what *kind* of recreation values should be counted in weighing its merits.

Washington's waterfront is at sea level, and below the District of Columbia the Potomac River spreads into a wide bay. Boating enthusiasts looking for wide expanses of water needn't travel far now to find plenty of open space.

Fishing, of course, is a different matter. The waters of the Potomac are polluted, both by upstream towns and by the nation's Capital.

Progress toward cleaning up Washington's river is slow—but progress is being made. While Virginia has already made notable progress elsewhere toward eliminating serious pollution, the rate at which you can clean up the sewer for two million people is necessarily going to be somewhat slower. But with the River Bend Dam somewhere in the future, hopes of a fishable population of game species in the Potomac also loom in the future.

Worth considering here, since proponents of the River Bend Dam are placing a value on reservoir recreation, is the question of spawning ground for anadromous fishes.

The rockfish, for example, requires clean rapids such as could exist at Great Falls and upstream. Today, with pollution keeping the rockfish in the lower Potomac, the possible future of striped bass spawning grounds at Great Falls is debatable. But so is the value of a silt-choked reservoir, with water levels bobbing up and down to the detriment of nest-building fishes.

It could be that after a decade of pollution control the rapids at Great Falls might rival the famous spring rockfish run on the Roanoke River at Weldon, North Carolina, where anglers use huge dip nets to snare whopping stripers. That's a million-dollar industry every year.

Primary need for Potomac impoundment is a water supply for the metropolitan Washington area. Secondary is flood control, and Col. Johnson also mentions recreation, abatement of pollution, and possibly power generation.

Some of these features are as incompatible as are two mothers-in-law. One axiom is that *the ideal control impoundment is an empty basin*, all ready to receive, hold, and

gradually release flood waters before the next deluge. Another axiom is that *the ideal hydroelectric impoundment or water supply pool is a full reservoir*, ready to be released upon demand.

The ideal recreation reservoir is a constant pool. with little or no fluctuation to disturb fish spawning. Shoreline facilities ideally have a constant water level.

Pollution control calls for a steady discharge of water to dilute pollution downstream. Power generation doesn't work like that. since peak demands coincide with the daily requirements of industrial users. In effect, power reservoirs discharge "slugs" of water followed by little or no discharge to dilute pollution.

It's when power reservoirs are storing up the river's flow that undiluted pollution causes spectacular fish kills.

By trying to be all things to all men, the Corps of Engineers can easily wind up with a vast system of reservoirs that serve few useful purposes for a limited time.

Col. Johnson's decision should take into account the "irreplaceable historic, natural, and recreational values associated with this 35-mile section of the river, its islands, shorelands, and the C & O Canal National Monument."

And the decision should emphasize the importance of small watershed dams. They can stop destructive runoff, catching it where it falls, and could provide the Potomac with a steady flow of clean silt-free water for municipal supply and pollution control.

Dams on the Potomac cannot create water, they can only contain water. Big dams, of the type common to all Corps of Engineers projects, contain water but create many problems.

River Bend Dam - - " Potential Recreation Asset "

By RICHARD H. STROUD
Executive Vice-President
Sport Fishing Institute, Washington, D. C.

THE most controversial aspects of the pending Potomac River development center around the possible construction of River Bend Dam. Much of the opposition seeks to prevent the flooding of river-bank real estate holdings which could be developed at substantial profits. Generally overlooked is the potential economic net benefit of River Bend. The latter was brought out impressively in a recent study by Checchi and Company (Washington, D. C., economic consultants) for the Maryland Department of Economic Development.

The study shows that for every dollar the state pays out to develop and operate River Bend. it would get back more than three dollars in net tax revenues. In dollars, it is conservatively estimated that there would be an increase in prime land value in the vicinity amounting to about $12 million, half of it in Maryland.

Tied closely to this are considerations of the present recreation opportunity afforded by the C & O Canal and of the potential opportunity that would become available after construction of River Bend. A 1959 estimate of total visitor-days to the 185 miles of the C & O Canal came to 586,500. Prorated uniformly on this basis, the 20 percent of the canal that would be inundated by River Bend would have accounted for 117.300 visitor-days (a maximum figure because that section is in poorly usable condition). However, it may be estimated conservatively that a River Bend reservoir will generate nearly 1.000,000 man-days of recreation annually due to sport fishing alone (possible maximum fishing use eventually exceeds three times that much). This would compare to some 21,000 angler-days of fishing estimated in 1954 on the 40 miles of Potomac River within the River Bend flowage area.

It is, of course, true that present natural islands and river banks within the impounded area would disappear. It is also true that they will disappear anyhow in a few years under real estate development. It is quite probable that reservoir development, alone, will provide sufficient reason to appropriate public funds ample to purchase perimeter lands for use by the public as recreation areas. Public access to this section of the river is scarce and little realistic prospect for improvement on any other basis seems to exist.

The more distant "big water" of Chesapeake Bay has much to offer—for those who like brackish water and are fortunate enough to have private access to it. For the most part, opportunities for access by the general public to Bay waters are extremely limited.

The Bay is difficult to reach from north and west of Washington, and increasing pollution has rendered it less inviting to many. Perhaps incredible to some folk, many millions of other folk actually prefer big freshwater areas for their outdoor recreation.

All alternatives envision maximum treatment of waste materials before they are discharged into water courses. This is established as a prerequisite to any dilution and not a substitute for it. Unfortunately, treatment alone will not do the job. The nutrients left in highly treated sewage wastes stimulate the growth of noxious algae. It is a paradox that the more sewage is treated the worse the problem can become, especially in sluggish estuaries.

It appears to us, in sum, that the conservation-recreation advantages of the Corps' *Main Stem and Upper Tributary* plan—which includes a major dam at River Bend—are overwhelming. This is doubly evident in terms of fish conservation and benefits for recreational fishing opportunity. Therefore, we favor that alternative. At the same time, we are strongly opposed to the Alternative Major Tributary plan because it would destroy uniquely valuable fishery resources and recreational fishing on the South Fork. Shenandoah (Virginia) and on the Little Cacapon (West Virginia) rivers.

No plan of reservoir construction, whatever its merits, should be permitted in any case, unless there is an adequate taking of perimeter lands in fee simple. Enough land must be purchased to assure an abundance of public access to resulting waters, together with car parking spaces, boat launching and landing ramps, and sanitary facilities, sufficient to accommodate all anticipated water recreationists. The lands taken must also be sufficient to permit transfer of large tracts to appropriate state and local agencies for development and administration as public recreation and park areas. Finally, there must be sufficient taking of lands to make up for the wildlife habitat actually lost through inundation to flood pool levels, thereby providing substitute areas for transfer to state custody. Then, we would be entirely confident that great net tangible and intangible benefits alike will be created for the general public when such a plan, once adopted, becomes implemented.

Reprinted from SFI Bulletin No. 122, January 1962.

VIRGINIA WILDLIFE

☆ ☆ ☆ ☆

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

300,000 HUNTED, 250,000 FISHED IN VIRGINIA LAST YEAR. A total of some 550,000 licenses to hunt and fish were sold in Virginia during the fiscal year which ended June 30, 1961. Approximately 300,000 of these were hunting licenses and about 250,000 were for fishing. Additionally, 191,860 supplemental deer, bear and turkey licenses and 64,580 trout licenses were sold during this period in Virginia.

The total number of licenses sold, compared with the preceding year, dropped by about 40,000. Most of this decrease occurred in sales of the county resident hunting and fishing licenses, the cost of which jumped from $1 to $2 on July 1, 1960, resulting in a drop in sales of 66,140 licenses in this category, Much of this decrease was made up by increases in sales of statewide hunting and fishing licenses, indicating that many sportsmen went ahead and paid the $1.50 difference to get the general state licenses.

GOVERNOR DESIGNATES MARCH 18-24 AS WILDLIFE WEEK IN VIRGINIA. Governor Albertis S. Harrison, Jr., officially designated March 18-24 as National Wildlife Week in Virginia. Commenting on the observance, Governor Harrison said:

"We in the Old Dominion are blessed with an abundance of wildlife in many forms. Hunting, fishing and appreciation of the great out-of-doors are part of our proud Virginia heritage. There could be no more appropriate time for us to pause and count our blessings in this regard than at this season of awakening life.

"From the beautiful Blue Ridge to the vast waters of Chesapeake Bay, we find a variety of outdoor recreational opportunities unparalleled in many other parts of this great country of ours. In addition to its important role in soothing our minds and spirits, outdoor recreation is an important part of the economy of the Commonwealth--actually a multi-million-dollar industry. With our rapidly expanding population and our increased leisure time, the outdoors and its wild inhabitants will play an even greater role in our daily lives in years to come.

"There is growing concern about the future of what is to some the most interesting of our many kinds of wildlife, our continental waterfowl population. This poses such an important challenge to conservation-minded citizens throughout the nation that 'Waterfowl for the Future' has been chosen as the theme of this year's Wildlife Week observance, for which the week of March 18-24 has been set aside.

"During this observance, I urge the citizens of Virginia to join in and support efforts to conserve our wildlife resources and to use them intelligently."

"DING" DARLING DIES. J. N. "Ding" Darling, Pulitzer prize winning cartoonist and one of the nation's conservation pioneers, died February 12 at 85 of a heart ailment. He put his talents to work for conservation at great personal sacrifice, and his keen insight and cartooning skill were instrumental in shaping many of our present day conservation trends. As head of the U. S. Biological Survey (now the U. S. Fish and Wildlife Service) he started the duck stamp program and succeeded in establishing many of our wildlife refuges. He laid the groundwork for the first North American Wildlife Conference and was largely responsible for the founding of the National Wildlife Federation and the Wildlife Management Institute. He also set up the Co-operative Wildlife Research Unit system at land-grant colleges throughout the country.

Grasp rod lightly, fingers coming around underneath, thumb lying on top or slightly around to left.

Lift rod to about 45-degree angle to take up slack; grasp line with left hand.

Start rod back, holding line tightly in left hand.

Stop rod abruptly at about the 2 o'clock position and pause until line nearly straightens out behind.

Bring rod forward with a snap of the wrist and release line from left hand.

Stop rod at about 40-degree angle and let the shooting line go out through the guides.

A Practical Start To Fly Fishing

By JOE BROOKS
Richmond, Virginia

IT'S the right start that makes a fly caster, and the basis of the right start is a matched outfit. A line that is too light or too heavy for the rod can ruin your casting as well as your fun; the weight of the line is of paramount importance because in fly fishing it is the line you throw, as compared with throwing a lure in other methods of casting.

The prospective fly caster, who is starting from scratch as far as equipment is concerned, would be well advised to choose his first rod according to the fishing he expects to do—an 8-foot rod for trout; and 8½ footer for casting big streamers and bucktails in the larger rivers and in lakes and ponds, for either trout or bass; and 9- to 9½-foot rod for largemouth black bass and for the various salt water species such as stripers and the various fish of the salty shallows in southern waters, where you will be using large, wind-resistant popping bugs and big streamers. With these latter large rods you need a larger fly reel, too: one that will hold 250 yards of backing as well as the conventional 120 feet of fly line. Salt-water fish sometimes make long runs and can strip a fly line in a jiffy and leave you with a bare reel core.

There's a great deal of variety in the size and weight of similarly marked lines produced by different companies, but basically the 8-foot rod calls for a double-tapered HDH line; an 8½ footer should have a GBF forward-tapered line for wet fly and streamer fishing, and a GBG double taper for dry fly; and a 9- or 9½-foot rod should be matched with a GAF line. Both the GAF and GBF should be the short forward taper known as a "bug taper," rather than the "rocket taper." The bug taper is shorter in the heavy section, or belly, and thus allows the caster to make a short backcast and still have enough weight of line to get a forward throw. With the rocket it is necessary to get more line out and keep more of it in the air, all constituting a hazard to the novice and an inconvenience in fishing because you are often casting in a confined space or with some obstruction behind you.

Now, having selected your outfit, pick it up. Grasp the rod lightly, with fingers coming around underneath and the thumb either lying lightly along the top or slightly around to the left. Just to get relaxed, wiggle your wrist a few times, up and down and sideways. Most beginners take such a strangle hold on the grip that they almost squeeze it flat. It is practically impossible to cast with the arm and hand muscles all bunched and tense.

To get out enough line to start casting, strip a few feet of line from the reel and let it hang out the tip guide of the rod. Strip a few more feet btween the reel and your left hand, which is holding the line just below the first guide. You are ready now to get out line.

Lift the rod to an angle of about 45 degrees above the parallel, in front of you. Now bring it back, stopping the rod at about 2 o'clock position in back of you, all the while holding the line taut in your left hand. Now bring the rod forward with a slight snap and at the same time release the line in your left hand. Those couple of feet of line you stripped from the reel will flow on out through the guides. Strip some more line from the reel and repeat this procedure till you have about 25 feet of line out.

Actually you have been casting, in a minor sort of way—false casting to get out enough line to make a throw. Now let's get down to the real thing. With that 25 feet of line lying on the water in front of you, push the rod arm out towards the fly and raise your wrist to an angle of about 45 degrees. This will bring the rod up and the line will move in toward you. Now, with a snap of the wrist lift the entire arm upwards and backwards until the wrist is cocked at about the 2 o'clock position by your right ear. This is the time to remember that in fly casting it is not the weight of a lure you are going to throw, but the weight of the line—so give that line time to roll out behind you, then bring the rod forward and at the same time get your wrist into it with a slight snap, as if hammering a nail into a wall in front of you. The weight of the line and your thrust forward will bend the rod into a bow, which, as it snaps forward again, gives the line extra impetus.

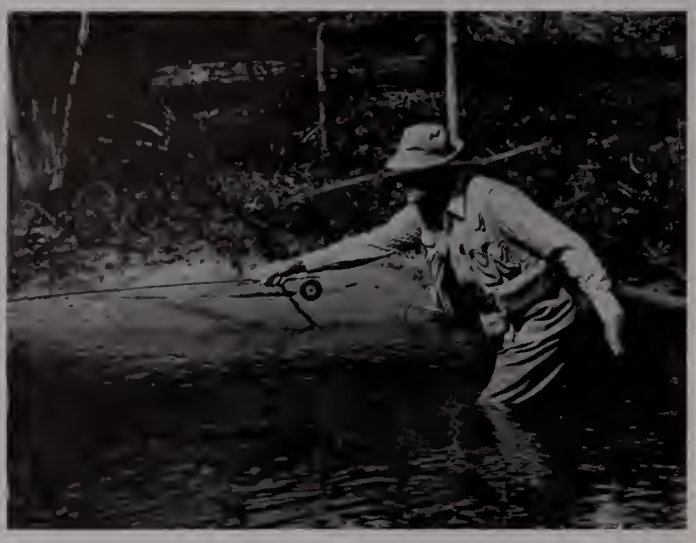
When you trigger the forward cast, do not aim at the water. Rather, make the throw to a point in the air above the water, so the line goes out parallel to it and drops on it, rather than being driven into it.

As it goes out, the heavy part of the line leads; as it reaches its length, the lighter part and the leader and fly roll over and straighten out; and when it lights, leader and fly are nearest your fish, and the heavier line is back where it is not so likely to scare him.

This simple forward cast is all you need to be able to do to start taking fish and should be perfected before you go on to any of the more intricate casts. Practice it on your lawn, in a gym . . . anywhere you can find room enough to raise your fly rod.

As you practice, remember that timing is the most important part of the throw. To achieve the good timing that will keep you from becoming entangled in a bird's nest of line and leader, get 35 or 40 feet of line in the air and try to keep it there for several minutes at a time, casting forward and back. Each time the line goes back, turn your head to watch what's happening out there behind you. Soon you'll know without looking just when the line has reached the right point for the forward throw. You will have the "feel" of it.

Probably the most exasperating hazard for the beginning fly fisherman is wind. There's nearly always a certain amount of breeze. Often you can get along by quartering the wind, so you are casting across rather than directly into



To beat a head-on wind, bring rod down hard at end of cast, almost to water. Line will get traction on the water and roll out into the wind.

For strip retrieve, line runs through thumb and finger of right hand holding rod. Left hand pulls down on line behind right hand.

it, but there are times when it's blowing right into your face and when you make a cast the light leader and fly blow right back into your face. Of course you can't circumvent a gale but you can beat a good strong wind by using the regular forward throw by bringing the rod down hard at the end of the cast—down almost to the water. The line and leader will roll out under the wind, very much on the order of a golf shot that is hit low into the wind.

In fly fishing, the handling of the fly can be just as important as the cast. The way that fly acts may be the deciding factor in whether the fish takes or doesn't take. A dead-looking offering won't get the first strike. You must make the fly look and act like what it is supposed to represent. If it is a bucktail or a streamer, supposed to match a bait fish, then you want it to dart forward, stop, fan its fins, turn, and just generally behave like a real live minnow. The same goes for a fly rod popping bug. While 60 per cent of the time the fish takes a popper while it is lying motionless, it is the action which first attracts the attention of the fish and awakens his hunger or anger, as the case may be. Similarly, a dry fly should float free as the real thing drifting downstream, or skip across the surface like an insect trying to get airborne.

Basic to achieving these actions is good control of your line, and this is done through the retrieve. To me, the strip method of retrieve is better than any other. The strip method allows the angler to move the fly smartly, stop it, give it fast, long yanks or slow pulls, and all the time he has a tight line, ready for the strike if a strike should come, or for the pickup for the next cast.

To do the strip retrieve, when the cast has been completed and the line is out on the water in front of you, draw that part of the line which comes out of the lowest rod guide through between the thumb and first or second finger of the right hand, which is holding the rod. Now, with the left hand take hold of the line just back of the right hand and pull—six inches, a foot, a couple of feet—whatever amount of line you want, and with fast or slow action as you want, to achieve the action desired in the fly. In the case of a dry fly, floating free, of course, you pull just enough to take up the slack which accrues as the fly floats down toward you. Each time you finish a pull with the left hand, close the thumb and finger of the right hand on the line, thus keeping it tight in case of a strike.

A few basic flies will set the fly fisherman up for his first few attempts, at least, for almost any species. For stripers—the "rock" of Virginia—streamers and popping bugs are the order, varying in size from number 4 and 2 up to the big, flashy 1/0 and 3/0's. For largemouth black bass, streamers and bucktails on number 1 and 1/0 hooks, and popping bugs in hook sizes 2, 1, and 1/0, will all take fish. Smallmouth bass like the same streamers and bucktails in smaller sizes, 6, 4, 2 and 1. The wounded-minnow-type bug is good for smallmouth, too, a fly that does not pop but rolls on its side when given action, looking like a wounded minnow struggling along.

For poppers which are to be used where there is a current, I like the face of the bug to be slanted back far enough so it will pop but not dive.

A basic selection of trout flies should include: dry—black gnat, royal coachman, light Cahill, light Henrickson, red variant, Adams, mosquito, quill Gordon, Tup's indispensable, on hook sizes 12 and 14; and black flying ant, blue dun, jassid, light Cahill, quill Gordon, on hook sizes 16, 18 and 20. Trout flies, wet—black gnat, ginger quill, light Cahill, coachman, royal coachman, professor, yellow Sally, olive quill, blue dun, gray hackle with yellow body, in sizes 12, 14 and 16. And nymphs—gray nymph, black and orange, black and yellow, Ed Burke, March brown, dark olive, caddis and light Cahill, in sizes 12, 14 and 16.

I have purposely left the matter of the leader till last because it is the part of the fly fishing equipment that most often defeats the novice, and because usually beginners do not realize its importance. All leaders should be tapered. Just as to me there is no such thing as a good level line, so there is no such thing as a good level leader. The leader should start with a heavy butt section next to the line. This heavy butt gives the force to turn over the terminal part of the leader in a nice roll. I start all my leaders with a short butt of 30-pound test nylon, and run down through 25, 20, 15, 12 and 10 to whatever tippet strength is best for the fish I am seeking.

Leader length should be from 7½ to 9 feet on trout streams, 9 to 15 feet in bigger waters, either fresh or salt. The last section, the tippet, may be as heavy as 10 pound test for stripers or largemouth bass, and as light as 5X for trout in small, clear streams. The lighter the tippet, the less the fish will see it, and the more strikes the angler will get.

Virginia's State Bird, Flower and Tree—

The Cardinal and the Dogwood

VIRGINIA'S flowering dogwood has been the official floral emblem of the state since March 1918 when it edged out Virginia creeper by one vote. It was designated our official flower by Senate Joint Resolution No. 3 signed by the presiding officers of the Senate and the House of Delegates on March 6 and later by the Governor.

Thirty-two years passed, however, before the Old Dominion had a state bird. On January 25, 1950, the General Assembly unanimously passed House Joint Resolution No. 9 making the cardinal the official bird emblem of Virginia. None more suitable could have been selected, for no other bird is a more integral part of Virginia's living landscape. In city gardens or country thickets, in mixed woodlands or along our many swampy streams, the bright flash of the redbird's wings and his sweet song are familiar beauties.

Then in 1956, the General Assembly selected Virginia's first official tree—the dogwood—when House Joint Resolution No. 6 was approved by the House and the Senate.

The dogwood has been known by many names. Since it was ideal for arrows, it was used for their manufacture in both the Old and New World and is consequently known in literature both as "arrow-wood" and "Indian arrow-wood." It has also been called "false boxwood," "cornelian tree," "Nature's-mistake," "Florida dogwood," white cornel," "spindle tree" and "bird cherry." Its scientific name (*Cornus florida*) is derived from "cornu," the Latin word for horn, in allusion to the hardness of the wood.

"Virginia nightingale" was the name first settlers gave the cardinal because its melodious voice reminded them of their favorite English bird. But the eastern cardinal has many names. Scientifically it is called *Richmondena cardinalis cardinalis*, but it is much better known as Virginia redbird, Kentucky cardinal, or cardinal grosbeak. One of the finches, it belongs to the largest of all bird families, the *Fringillidae*, which also includes sparrows, buntings, grosbeaks and crossbills, and is distributed throughout the world except in the Australian region.

The range of the flowering dogwood is in dry woods from southern Maine westward to Ontario and southern Minnesota and southward to Florida and Texas. In Virginia it is found both in tidewater and up to an altitude of 4,400 feet above sea level in the mountains. From the middle of April on, its radiant flowering lights the woods and gardens of the Old Dominion. In fall the dogwood continues to hold a bright spot with its red-mottled leaves and scarlet fruit which usually lasts well into the winter.

The cardinal is a year-'round resident and flaunts its brilliant plummage even against the snow and on bare winter trees. Orginally a bird whose range was limited to the south, the cardinal has gradually pushed its way northward until now it ranges as far north as southern South Dakota and Iowa, northern Illinois, Indiana, Ohio, the lower Hudson Valley and southern New England. It has been recorded locally even in southern Ontario. It is found from the Atlantic coast westward to southern Arizona, and southward to the northern part of the Gulf States and in Bermuda.

Description: Dogwood

The flowering dogwood is a large shrub or small tree which usually grows from four to 12 feet tall, though individual trees often attain much greater heights. It has very rough bark and spreading branches. The wood, close grained and hard, is used especially for shuttles and cogs in textile machinery and for inlaying in fine cabinet work.

What we speak of as the "flower" is a small compact cluster of inconspicuous greenish-white true flowers surrounded by large showy petal-like bracts which are usually white, but sometimes pink and occasionally even rose red.

The red fruit of the dogwood is a spherical drupe, either one- or two-celled in our species, and the seeds are oblong. (A drupe is a fleshy fruit with a hard seed at the center: e.g., a peach.) Since the berry-like drupes of the dogwood, which ripen late in the summer, stay on the branches well into winter, they are very useful as a wildlife food for upland game birds, song birds, waterfowl, small mammals like the chipmunk and the white-footed mouse, and fur and game animals like deer, bear, beaver, rabbit, skunk and fox, some of which utilize not only the fruit but also the wood and foliage as browse.

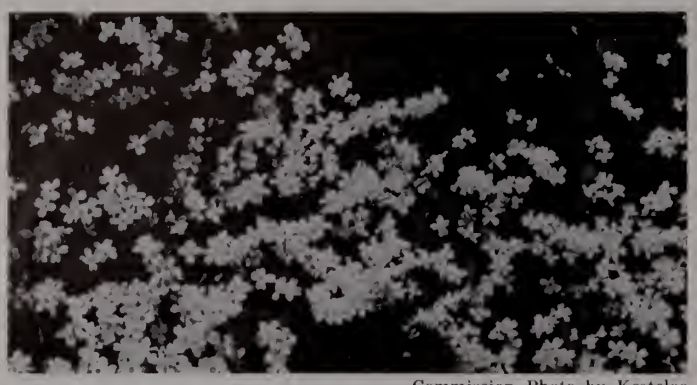
Dogwood foliage contains two-way whitish hairs, flattened to the surface and attached at the middle of the leaf.

Description and Voice: Cardinal

Crested, short-winged, long-tailed birds, cardinals are from seven and one-half to nine and one-quarter inches long, with a wingspread of from 10¼ to 12 inches. The male is red except for a grayish tone to back, wings, and tail and a black patch from the upper throat surrounding the red beak. The female is olive grayish on head and body, with a dull red on the bill, crest, wings and tail. The bill patch is slate colored, and the under parts, yellowish brown. Young cardinals resemble the female except for their dark beaks.

Whether it is a single cardinal spilling his song from a a treetop or a chorus of redbirds from a swamp, the music has a joyous sound. The song of cardinals is a series of clear rapid whistles, each sound repeated several times, as in "What-cheer, what-cheer, what-cheer," "Purty, purty, purty." "Kew, kew, kew." "Whoit, whoit, whoit." The male starts tuning up his vast repertoire when the first sunny days of February come and by spring is in full voice. Though the peak exuberance of his singing may be over by mid-July, about the time the second brood is leaving the nest, he may favor us with unexpected singing at almost any time of

Adapted from VIRGINIA WILDLIFE articles written by Mrs. Dorothy U. Troubetzkoy: *The Cardinal*, March 1954; *The Dogwood*, April 1954.



Commission Photo by Kesteloo

Dogwood foliage is distinguished by its two-way whitish hairs, flattened to the surface and attached at the middle of the leaf. Its flat spreading white or pink blossoms greet travelers in the spring.

S.C.S. Photo

The red fruit of the dogwood is a spherical, berry-like drupe, with oblong seeds. It is useful as a wildlife food for game birds and small animals, which also utilize both wood and foliage as browse.

year. The female also sings a soft subdued note at times. Except among grosbeaks, it is rare for female birds to sing.

Habitat

There are many varieties of dogwoods, sometimes called "cornels," about 50 in the world and 17 in the United States. All are shrubs except our flowering dogwood and a Pacific coast variety which often attain the stature of small trees. The species vary somewhat in habitat requirements, but most prefer fertile, moist soil in open woods or along streams, roadsides or fencerows. They make excellent hedgerows.

Bird houses won't do for cardinals, since they should be used only for birds like the wren and bluebird which nest in holes. Cardinals prefer dense shrubbery for nests.

Throughout the winter, cardinals are found in mixed flocks and are easily attracted to winter feeding stations by sunflower seeds, corn or mixed seeds. In the fall, dogwood, black gum, pokeberries, and wild grasses make up a large part of their food. Cardinals dispose of many garden pests, too, for they feed their young exclusively on insects and nearly a third of the adult bird's diet is also insects.

Nesting

In March the flocks break up into mated pairs and nesting gets under way. The bulky nests are loosely built of twigs, leaves, bark strips, rootlets, weed stems, and grasses. They are cupped quite deeply and lined with fine grass and hair. The three or four white, greenish or bluish white eggs are variously spotted, blotched or dotted with shades of brown. Often one egg is strikingly different from the others, smaller and whiter and seemingly from a different bird.

Nests are usually low, sometimes only three feet from the ground, but average height is six to eight feet and the site is well camouflaged. Nests have been observed as high as 30 feet from the ground in a vine-covered sapling. Garden shrubbery, porch vines, thickets, briar patches, evergreens, a tangle of grapevines— these are preferred sites.

The males never incubate, but serenade and feed the females during the 12 day's incubation. The young remain in the nest 7 to 11 days. The male helps feed the young.

Legends

From very ancient times, legends have clustered about the dogwood. On Mount Ida in Greece dogwood grew in the grove sacred to Apollo and it was believed that the god was angered by the impious cutting of those trees which made up part of the lumber in the Trojan Horse.

Most familiar of the legends is that which identifies the wood of the dogwood with the lumber of the Cross. Jesus, so the story goes, was so moved to pity by the sorrowing tree put to this cruel use that He comforted it by promising it would never again grow large enough to be employed for such a purpose. It is said, too, that the bracts, which resemble the shape of the Greek cross, bear nail marks of the crucifixion. The mottling of the leaves with red in autumn also has been associated with the Savior's blood at Calvary.

Protective Efforts and Legislation

We owe our choice of the cardinal as the state bird largely to the efforts of the Federated Garden Clubs of Virginia, which made its adoption one of its main projects during the presidency of Mrs. J. H. Adams. Similarly, we are indebted to the Garden Club of Virginia, particularly the Garden Club of Norfolk and Mrs. Frederick Kellam, who was president during the campaign which resulted in the selection of the dogwood as our state flower. In 1932 the Garden Club of Virginia followed up this official recognition with another project for planting dogwood which had as its slogan, "A million dogwood by 1935."

In 1954 legislators were excited to activity in behalf of the dogwood, and Senate Bill No. 88, better known as the Byrd-Godwin Bill, was approved on April 6 and added as an amendment to Title 10, Chapter 4 of the Code of Virginia. The act, designed to increase legal protection of the dogwood—so aptly called "spindle tree"—against indiscriminate commercial use, stipulated that it shall be unlawful for any person, either for himself or as an agent of someone else, to purchase or otherwise acquire for manufacturing purposes any dogwood cut from any tree which has a diameter at ground level of less than six inches. Violators are to be fined $10 for each illegal dogwood. Persons convicted of advertising for purchase or acquisition of dogwood in violation of the act may be fined up to $100.

As valuable as they are lovely, with their delicate floral-like bracts, their fine-grained sturdy wood, their fruits and browse for wildlife, dogwood trees are ideal for planting to beautify the landscape and attract birds. The flowers should be picked sparingly in Virginia's piedmont and coastal plain areas, but may be gathered somewhat more freely in western Virginia where they are more plentiful.

The cardinal is guarded by state and federal regulations. All wild birds, except those designated as undesirable predatory species, are protected by the state (sections 29-173, 29-132 and 29-134 of the Game, Inland Fish and Dog Code of Virginia), and the cardinal is one of the insectivorous birds now safeguarded by the federal government through the Migratory Bird Treaty Act of July 3, 1918, and amendments.

Fish Management: Stocking

By DOROTHY E. ALLEN
Education Officer

OUR objectives are:

1. To understand why the stocking of hatchery fish can be either beneficial or harmful, depending on the circumstances.

2. To understand the role of the fish hatchery in a fish management program.

A map of your county and a planned visit to a fish hatchery will be helpful in attaining our objectives.

Fish culture has been practiced since the earliest history of man. The Chinese, as far back as 2100 B.C., had laws governing the taking of fish spawn for rearing purposes. The ancient Greeks and Romans spent as much as the equivalent of $160,000 for marble fish ponds in which to rear their favorite fishes. In Central Europe, carp farms, begun as early as the thirteenth century, are still in operation today.

By the middle of the nineteenth century, methods of artificial rearing of fish were fairly well established. However, it was not until the beginning of the twentieth century that fish farms, or hatcheries, began to be established for the sole purpose of rearing fish for sport purposes.

For many years, in Virginia as elsewhere, stocking remained the backbone of most fish management programs, and most complaints of poor fishing were answered with another truck load of fish. The importance of stocking in maintaining good fishing (with the exception of trout) was vastly overrated. With the passage of time, our knowledge of fish management principles increased and stocking was found to be only one of many tools available to fish managers.

Careful studies have proven that fish are extremely prolific. For example, an average-sized female bass may spawn 10,000 eggs, a bluegill 25,000, a walleye 50,000 and a large carp over a million. Quoting from an established authority, "A big female bass in a one-acre farm pond could produce enough progeny so that, if all eggs hatched and all fish survived for three generations, there would be enough fish at one pound each to replace the water in the pond and to make a heap, one acre in area, extending over 700 feet above the pond!" In view of this tremendous reproductive potential it is easy to see why many of the billions of small fish stocked failed to improve fishing. Actually, many waters were found to have too many fish for the amount of food available, and the addition of fish from hatcheries hindered rather than helped. Improvement of existing fish habitat was found to be of more importance in increasing fish populations than stocking in most instances. As more and more information was collected, the value of stocking was placed in proper perspective and the following stocking principles evolved.

Stocking of warm-water fish should be restricted to the following conditions:

1. To introduce new and desirable fish species in water in which they are absent but only after making careful studies of their effect on species already present.
2. To replace fish killed by wholesale pollution.
3. To compensate for lack of natural reproduction.
4. To stock newly created waters.
5. To adjust the population after partial or total reclamation.

Commission Photos by Harrison and Cutler

Shown here are a bucket of trout food pellets and the rearing ponds where, after being hatched in the hatchery, trout are held until they reach the desired size for stocking.

Attention, Teacher

Different kinds of land are adaptable for raising different crops such as grass, grain or timber. These vegetative crops, in turn, furnish food and cover for the production of different types of animal crops; for example, livestock are found in the pastures, deer and quail in forest-edged grain fields, and squirrels in the forests. Fish are considered a harvestable water crop, but the kind of fish that can be produced depends on the characteristics of the body of water.

Important factors in the aquatic habitat include temperature, depth, dissolved oxygen, acidity or alkalinity, type of bottom, and plants and food organisms present. Then, for proper management, the kinds of fish present and how well they are growing must be determined. What percentage of the fish present are being harvested? Are more being harvested than can be replaced by natural reproduction? Is stocking needed to maintain the maximum yield that particular body of water is capable of producing? If stocking is necessary, what species of fish should be stocked? Should rough fish be controlled to give more food and living space to more desirable species?

Through proper management, more pounds of better fish can be harvested from an acre of water, just as more pounds of desirable beef can be taken from an acre of pasture under good management.

Fish management involves manipulation of the characteristics of a body of water (lake, pond or stream) and its fish population in such a way as to produce the highest possible sustained yield of the most desirable species possible from the particular body of water involved.

To produce the best possible fishing is the particular responsibility of the Game Commission's Fish Division. The first management tool we will discuss is STOCKING. Other tools such as regulations, environmental improvement, controlling fish populations and creating more fishing waters will be taken up in later studies.

Commission Photos by George H. Harrison

Artificial spawning or stripping is a common practice in hatcheries and is not harmful to the fish. The abdomen of a "ripe" female is gently pressed to release the eggs, and a ripe male is then stripped into the same pan to complete fertilization.

The introduction of brown trout is one example of an introduction of a new species which has paid good dividends over the years. However, too little research was made prior to the introduction of the carp in our waters, and thousands of dollars are spent annually trying to control this species which competes with more desirable native fish species.

Hatchery fish are also used when a species has been completely eliminated by pollution or a natural fish kill. If a survey of the fish population shows that a desirable species' population has been completely killed, leaving no brood stock for natural reproduction, hatchery fish are then stocked.

Hatchery fish are used to stock a new lake or a rehabilitated lake. Sometimes a lake becomes so over-populated with fish that are not desirable to sportsmen that it becomes necessary to rid the whole lake of all fish. This is accomplished by the use of chemicals or by draining the lake.

Sometimes a partial reclamation is done to thin the numbers of fish in a pond so that there will be more food for the ones remaining. Farmers do this to their gardens. Carrots, beets and many other vegetables are thinned drastically in order that the remaining plants will have room and food to grow. It's the same with fish! After a pond is thinned, there is more room for game fish and sometimes a limited stocking is made. In all cases, a lake produces better sized fish following a successful thinning.

The role of stocking in trout management, however, differs completely from that described for warm water fish management. Due to the extremely small size of the streams in Virginia that are cold enough and contain sufficient oxygen to support trout, natural production of trout in these streams is exceedingly low. To meet the needs of the ever increasing number of fishermen interested in trout fishing, it is necessary to supplement natural production with hatchery-reared fish.

Proper size, time and place of planting are important ingredients in stocking success. Since trout hatcheries play such an important role in providing trout fishing for Virginians, let's examine a typical hatchery operation.

In all trout hatchery operations, selective breeding is attempted. By "stripping" the eggs from the females and milt (sperm) from the male, a high degree of fertilization can be obtained when the eggs and sperm are mixed at the hatchery. The removal of spawn from fish does not injure the fish in any way if they are carefully handled. The young from adult trout at least three years old are superior to those from the eggs of younger parents. When the trout eggs are taken in the fall, they are placed in wire mesh trays and set in troughs in the hatching building. The troughs have a constant flow of running water in them, and the trays are set an inch above the bottom of the troughs. It has been found best to have the water at about 52° F. In water of this temperature the eggs hatch in about 40 days. They would hatch in fewer days in warmer water, but the fish would not be as strong. The infertile eggs can be detected and are carefully eliminated.

As the tiny fish hatch out, they drop through the screen in the bottom of the trays and remain in what is called the yolk stage for about 21 days. When the yolk-sac disappears, the fish are then fed on liver by means of small syringes in which the finely-ground food is picked up and squirted into the troughs. They are fed on liver for about six weeks; then they are put into narrow ponds to fight the current where they are fed a balanced, high protein pelleted diet.

An important feature of the hatchery construction at the state's Marion station is that the outdoor ponds are so constructed that there is a swift flow of water through all of them. Thus, the trout live almost their entire lives fighting currents similar to those found in trout streams. When they are finally released, they are robust, muscular, full of fight, and able to take care of themselves. Restocking is begun in March and is continued throughout the summer.

In summary, stocking can be beneficial, wasteful, or harmful, depending upon the wisdom with which it is used.

Suggested Activities

Visit a Virginia fish hatchery. Visiting hours are 8 a.m. to 1:30 p.m. each day of the week. Circular No. 18 gives locations and the best times of the year to visit the hatcheries.

Find out what ponds and streams near you are good fishing streams. Mark them on your county map. Use different colors to designate the different species present.

Pay a visit to some landowner who has a fishing pond. Give an oral report on how it had been stocked.

Ask the state game warden in your county to visit your class and tell you about the stocking practices in your area.

Try to arrange a trip to watch hatchery men stock a stream with trout.

Some Reference Materials

"Game Commission's Inland Fish Propagation Facilities," Commission of Game and Inland Fisheries, Circular #18.

Hoffman, Jack M. "A Biologist Looks at the Virginia Trout Program," *Virginia Wildlife*, XVII (September, 1956).

Martin, Robert G. "New Hopes in Virginia's Trout Fishing," *Virginia Wildlife*, XVII (September, 1956).

Martin, Robert G. "The Pros and Cons of Brown Trout," *Virginia Wildlife*, XXII (March, 1961). Reprint A-4.

Stras, Beverley W., Jr. "The Virginia Commission of Game and Inland Fisheries," *Virginia Wildlife*, XX (September, 1959). Reprint A-1.

Watkins, T. D. "Virginia's Trout Program," *Virginia Wildlife*, XVII (May, 1956).

These 16-mm motion pictures are available from the game commission free of charge: Trout Factory (sound, black and white, 10 min.), Brooks and Rainbows (sound, color, 26 min.).

NEXT MONTH: Study 4B—Fish Management: Creating New Fishing Waters.

Commission Photo by Kesteloo
Boat numbers must be in color contrast to background, three inches high, letter groups separated by space or hyphen.

Ready Your Boat For Summer Fun

By GEORGE W. "SKIP" CRAMER
Service Manager, Rowlett's Sport Center
Richmond, Virginia

NOW that spring and summer are on the way, many people are thinking of the wonderful days and week ends ahead in which out-of-doors sports and activities can be enjoyed. This year, as in the past, lots of people will be turning to the water for boating and fishing . . . and, as in other years, there will be a few boat owners whose first day of boating will be less than a pleasure. It would be a good idea for you to do a little checking over your outfit before taking to the water to insure a wonderful time on the first day of your boating season.

There are many things a boat owner can do to get his boat ready for use. An "Owner's Manual" can be a great help in the care and maintenance of an engine. Proper maintenance can save the boat owner a lot of expense and headaches. Set aside one afternoon for preparing your boat for use *before* you head for the water.

Check Your Motor

Remove gas tanks, and with a flashlight determine if any water is present in the tanks. If the tanks have gas that has been left from last season, discard it and start the season with fresh fuel.

Throughout the engine there are several grease fittings and oil holes that should be greased and oiled. Check to see that the lower unit is full of oil. (Loosen bottom plug; presence of water indicates leaking seal.) Examine propeller for worn or bent blades. Inspect for loose bolts and nuts, loose or broken wires, leaking hose and signs of rust.

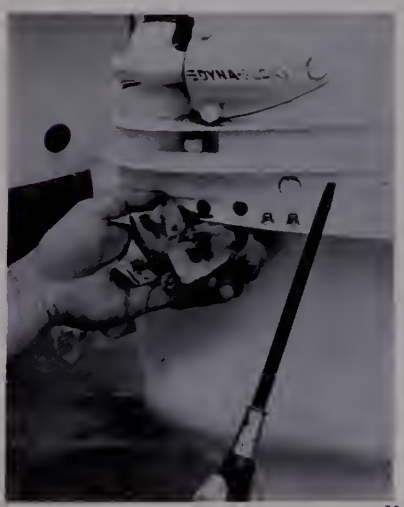
With the starter rope, pull your engine through several times and note if the engine is tight or even stuck. If the engine is stuck, make no attempt to force it to turn. This repair should be done by a qualified serviceman.

On smaller engines, spark can be checked by removing spark plugs, and, with wire still attached, laying plug against block and pulling through with starter rope. No spark indicates a definite electrical problem. On larger engines, this check may not be quite as easy, but it can be done. With engines that are equipped with electric starting, just turn key on and off. If battery and starter are in working order, engine will turn easily. (*Do not let engine start under any circumstance unless your outfit is in water. Running an outboard engine out of the water can cause serious damage to the motor.*)

Control cables need grease, too, and it's a simple matter to smear a little on the exposed surfaces to keep them in top working order.
Mercury Outboard Motors Photo

Check Your Boat

Look over your boat, also. Check your electrical equipment, lights, horn, and compass. Check steering for loose pulleys, broken tiller rope, or, if you have mechanical steering, find the two grease fittings—one at the motor, one at the steering wheel just under the dash panel—and apply grease. Check all your mooring line, anchor line and ski tow line. Check life jackets or life preservers. Be sure your boat is registered and that numbers have been installed properly.



After removing the two plugs on the lower unit housing, it is easy to add a few shots of grease if it is needed.

Mercury Outboard Motors Photos
An approved-type fire extinguisher is recommended for every boat.

Check Your Trailer

Check over the condition of your boat trailer. Oil or grease the rollers. Check tail and turn lights, winch rope or cable, tire pressure, and wheel bearings. Be sure the trailer has been inspected.

For major repairs, it is advisable to consult your dealer. Many repairs, such as motor tune-up and overhaul, should be done by trained personnel.

For a summer of happy boating, be sure your rig is in good working order. Here is a list of some if the important things to check:

Motor: (1) oil and grease, (2) spark plugs, (3) gas tank, (4) starter, (5) ignition, (6) lower unit, (7) propeller, (8) battery.

Boat: (1) electrical equipment, (2) steering, (3) remote controls, (4) life preservers, (5) line and anchor, (6) fire extinguisher, (7) registration.

Trailer: (1) oil and grease, (2) proper roller adjustment, (3) winch line, (4) lights, (5) tire pressure, (6) wheel bearings, (7) safety chain, (8) inspection.

Bird of the Month:

The Bluebird

By DR. J. J. MURRAY
Lexington, Virginia

THE cheery little bluebird is a favorite with everybody. It is so attractive in coloring, so gentle in habits, so friendly and confiding that it stirs affection as well as interest.

One of the tragedies of our outdoor scene in the eastern states is the great diminution in the number of bluebirds. For years now it has become increasingly scarce in Virginia. Possibly a number of factors enter into this decline. Scarcity in some seasons is due to hard freezes that kill numbers of bluebirds by cutting off their winter food supply. Undoubtedly one big factor, and probably the chief factor, is the increase in the number of starlings. The starling, because of its more aggressive manners and because of its use of similar nesting places, is a dangerous competitor of the bluebird for nesting holes. In the west, where in recent years I have spent a Colorado summer and a Texas winter and where starlings are fortunately still uncommon, this decline in the bluebird population has not been so serious.

Its lovely blue back and its reddish throat and breast make this little bird quite distinctive. Because of the differences in coloring, the relationship of the bluebird to the robin and other thrushes is not readily recognized. It is much more noticeable in the young birds, in which plumage bluebirds, like young robins, have the spotted breasts of thrushes. These spots are lost when the birds molt into the adult plumage. Female bluebirds are duller than males, as is the case in most species of birds, while young birds in their first winter are still duller than females.

The bluebird builds a very simple nest of fine straws, always in some kind of cavity—a rotten knot hole, an old woodpecker hole in a tree truck or fence post, or, better still, a bird box provided by a thoughtful human friend. The best chance to get a pair on your farm, or at your yard, if you live on the edge of town, is to put up nest boxes on fence posts, and then shoot any starlings that come around the boxes. Because of the starling they need all the encouragement we can give them. In this nest four or five pale blue eggs are laid. Robins and other members of the thrush family customarily lay blue or blue-green eggs, the bluebird's eggs being a duller blue than those of their relatives.

A few bluebirds remain in Virginia in winter, even in the western part of the State. In early spring the northward movement of birds which have wintered to the south of us increases our numbers. One of the most pleasant announcements of the coming of spring is the sound of the cheery notes of the bluebirds as they fly over. It will be a sad day for all nature lovers if these friendly birds should disappear from our fields and hedgerows.

Edited by DOROTHY ALLEN

Photos by John Brandon

Stuart O. Newman, formerly a game warden and now with the education division, watches J. Byron Rockwell, vocational agriculture instructor at Park View High School, present bags of seed to LaCrosse Elementary School students for their wildlife food plots. Howard Mustian, school principal, is at right.

Leon Toone shows Mr. Rockwell and Principal Mustian his winning wildlife food plot.

Wildlife Food Plots Promote Wildlife Conservation In Lacrosse School Area

For the past 12 years wildlife conservation has been an important activity in the LaCrosse School area in Mecklenburg County. The diminishing number of game animals and birds concerned the school children because stories had been told them by their grandparents of the former abundance of game in the area. Realizing that something should be done on a statewide basis to increase our wildlife, the students were happy when the first wildlife essay contest was offered to the children of Virginia. Through the efforts of local FFA members, the entire school started writing essays and entering the state contest. Later the school participation prize was offered. This led to 100 per cent of the eligible school children taking part in the wildlife contests. During the years LaCrosse students have won a large number of the top individual prizes and the school participation prize.

Another feature added to create interest in wildlife was the wildlife food plot. Prizes were offered by the LaCrosse Ruritan Club to the students having the best wildlife food plots. In cooperation with Stuart O. Newman, formerly a state game warden and now game commission field educational services coordinator, plans for the contest were set up at LaCrosse Elementary School. Three-pound packages of mixed wildlife seed were furnished to each student by the Commission of Game and Inland Fisheries.

In November judges visited the plots. What a job they had in judging! LaCrosse District was well covered; young people had seed plots from the Roanoke River on the south to Brunswick County on the north, and from Brodnax on the east to South Hill on the west. Wildlife, mostly quail, was found on nearly every plot when visited by the judges.

The checks were awarded to winners in a chapel program. Leon Toone was awarded first place. Leon used an old tobacco plant bed site which was ideally located. The soil was rich, he fertilized properly, and the 100-yard area was a perfect stand. It was located near a stream, and cover for wildlife was found on all sides. In order to get in a little extra boast he picked undesirable weeds and grass from the plot by hand. Lucius Clark won second place; John Reese third place; Donna Pritchett fourth place; and four students tied for fifth place: R. L. Bonney, Jr., Jerry Kinker, Rebecca Cumbia, and Herbert Clary.

It is hardly believable that game has made such a come-back in our area. It will be a constant struggle on the part of our citizens to keep it this way. May our young people never have to say "we are not interested in hunting and fishing because of the scarcity of wildlife." And lets every game warden in the State of Virginia get behind Stuart Newman in his efforts to promote wildlife conservation among our youth.

—By *J. Byron Rockwell, Vo-Ag Instructor. Park View High School*

Gerald Garrett, a sophomore at Dan River High School, was the winner of this year's Pittsylvania County wildlife food plot contest, sponsored by the Izaak Walton League in cooperation with the county vocational agriculture department. Gerald was presented a check for $25.00 from the I. W. L. A. chapter.

Shenandoah County Winners

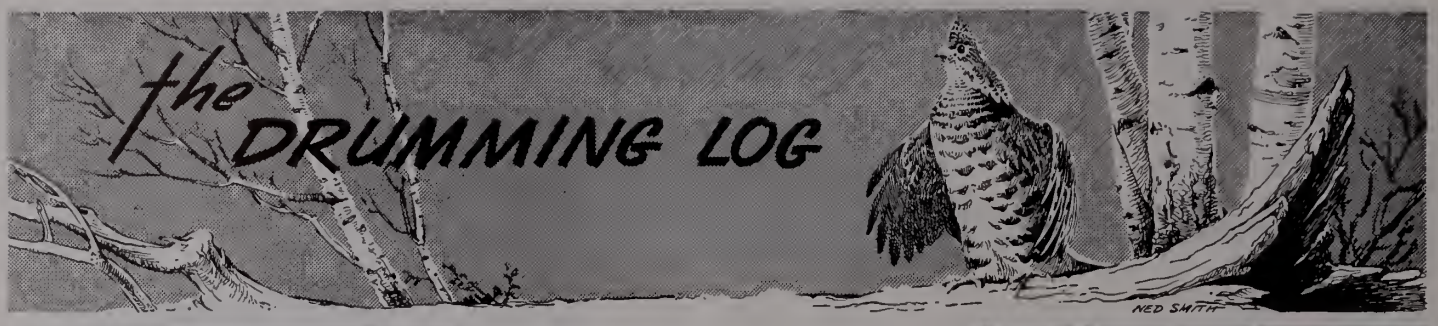
For the third year the Ruritan Clubs of Shenandoah County through the vocational agricultural departments of three high schools have sponsored wildlife food planting contests. The Game Commission has furnished the game bird seed mixture and has helped the Soil Conservation Service judge the patches. Seventy-five boys entered the contest and the three top winners from each school received Savings Bonds.

The Strasburg High School winners were Edwin Tamkin, Doug Pence and Robert Orndorff. For Central High School: Dwight Cook, Billy Bushong and Paul Racey. For Stonewall Jackson High School: James C. Miller, Carl Barb and Wm. F. Miller. The grand prize went to Edwin Tamkin of Strasburg High School, and his school will receive an engraved plaque.

Things To Do

Clean your bird houses and replace for the new spring tenants. Sometimes mites cling to the insides of bird houses and it is best to clean and scald the insides or dust with an insect powder.

In late April clean and store your feeders until late fall. Leave the wire suet holders outside. You can put suet out until it is so warm it melts.



Edited by HARRY GILLAM

Commission Photo by Gillam

Dr. Theodore R. Ridgeway (right), field veterinarian with the Southeastern Cooperative Wildlife Disease Study at Athens, Georgia, shows some deer parasites to (from left) Richard H. Cross, Jr., Virginia game division chief, Jack V. Gwynn, state game research biologist, and Dr. Burd S. McGinnes, leader of the Virginia Cooperative Wildlife Research Unit. Dr. Ridgeway spoke at a recent game division meeting in Lynchburg and addressed sportsmen in Suffolk and Toano.

Photo by S.C. Wildlife Resources Dept.

Elected to office at the organizational meeting of the Southeastern Society for Conservation Information and Education in Atlanta last October were (from left) Ed Adams of the Kentucky Department of Fish and Wildlife Resources, president; Gus Albright of the Arkansas Game and Fish Commission, vice-president; and M. Rupert Cutler, of the Virginia Game Commission, secretary. Elected treasurer was George Kyle of the U. S. Forest Service, Atlanta.

Research Symposium Announced

A symposium on basic research on Virginia's natural reseources, sponsored by the Virginia Institute for Scientific Research and the Virginia Academy of Science, will be held on May 10, 1962, at the Golden Triangle Hotel in Norfolk. Six outstanding, nationally known speakers have accepted invitations to appear on this program. They are:

Dr. Gilbert Thiessen, Assistant to Vice President, Koppers Company, Pittsburgh, Pennsylvania; coal and coal products research; formerly, U. S. Bureau of Mines, Illinois Geological Survey, American Tar Products Company.

Dr. George H. Hepting, Chief, Division of Forest Disease Research, Southeastern Experiment Station, U. S. Forest Service, Asheville, North Carolina; forest pathology; formerly, Cornell University and Experiment Stations at Amherst, Massachusetts and New Orleans, Louisiana.

Dr. J. Laurence McHugh, Chief, Division, Biological Research, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington; marine biology, biometry, oceanography; formerly, Director, Virginia Fisheries Laboratory.

Dr. Clarence C. Little, Scientific Director, Tobacco Industry Research Committee, New York City; mammalian genetics; formerly, Director, Jackson Memorial Lab, Maine; President, Universities of Maine and Michigan.

Dr. A. Geoffrey Norman, Professor, Botany and Director, Botanical Gardens, University of Michigan; soil-plant relationships and plant biochemistry; formerly, The Rothamsted Experiment Station, England, University of Wisconsin, Iowa State, and U. S. Army Chemical Corps Biological Labs.

Dr. John C. Frye, Chief, Illinois Geological Survey, Urbana; ground water geology, physiography; formerly, Ohio State, University of Iowa, and Kansas State Geological Survey.

For additional information, contact Dr. Russell J. Rowlett, Jr., Virginia Institute for Scientific Research, 2820 Grove Avenue, Richmond 21, Virginia.

"Chester just came in—I'm sure he caught something."

Commission Photo by Gillam

Officers of the Virginia Wildlife Federation for 1962: Front row, from left—David R. Arrington, executive secretary; Frank W. Dyer, president; John O. Tyler, vice-president; James E. Zerkel, vice-president; L. R. Gardner, treasurer. Back row—W. P. Tunstall, director; Glenn R. Frum, national representative; and Frederic R. Scott, corresponding secretary.

For being named Virginia's "warden of the year" in 1961, State Game Warden McGuire Morris, Jr. of Powhatan was awarded a certificate in ceremonies at the Southeastern Association of Game and Fish Commissioners meeting in Atlanta last October.

Game Manager Ashby Dies

Roy A. Ashby 30, a native Virginian and game manager at the Commission of Game and Inland Fisheries' Hog Island Refuge in Surry County, met with a fatal accident on February 3. A tractor he was operating on the refuge overturned, pinning him beneath it in mud and water.

Roy came to work with the Commission on July 1, 1956. Known as a loyal and earnest worker, he will be greatly missed by the Commission in the operation of the Hog Island Refuge where he and his family lived.

The funeral was at a Bacons Castle church near Surry. Roy is survived by his wife, Gladys, and two small children.

Edited by JIM KERRICK

Basic Seamanship and Safe Boating Course Offered

A course in basic seamanship and safe boat handling is now being sponsored by the U. S. Coast Guard Auxiliary at Kilmarnock, Virginia. According to Commander K. B. Walley, boating families are receiving expert instruction in maintenance, operation and navigation of small craft by William Walker who has many years of experience in both large and small boats. Classes are being held on Tuesday evenings at 8:00 p.m. at the Kilmarnock Rescue Squad Building.

Law Enforcement

The enforcement of boating laws is accomplished in such a manner that the objectives of such laws will be attained with a minimum of disturbance to and a maximum of cooperation from the boating public. The major consideration is safety to life and property. The U. S. Coast Guard and the Virginia Game Commission conduct vigorous boarding programs to insure adequate safety

"Throw out the anchor now, Mary."

equipment on boats and, by means of patrol and educational programs, attempt to improve the habits of boat operators to prevent reckless or negligent operation.

The number of routine boardings for enforcement of the federal boating safety laws is increasing steadily as emphasis on this program is increased to keep pace with the growth of recreational boating. The deterrent effect of patrols and the fruits of the education program on reckless and negligent operation have kept the number of citations for such violations reasonably low.

Continued emphasis will be placed on motorboat law enforcement by the Coast Guard and the State Game Commission in order to insure the safest possible record for this activity.

What The Pleasure Boat Skipper Needs To Know

How can the pleasure boat skipper keep from becoming another statistic in the log of weather-caused boating casualties? The first requirement is to observe three weather safety rules:

No. 1: CHECK WEATHER AND SEA CONDITIONS *BEFORE* SETTING OUT.

No. 2: KEEP YOUR WEATHER EYE "PEELED" WHILE OUT.

No. 3: KEEP CHECKING ON WEATHER FORECASTS AND WARNINGS UNTIL YOU RETURN TO YOUR MOORING.

These three rules could readily be combined into one simple statement: KEEP UP TO DATE ON THE WEATHER.

Coast Guard Photo

Lieutenant Commander Leland O. Wilkie, USCG, Director, Fifth Coast Guard District Auxiliary, and Commodore Wallace B. Twigg, USCG Auxiliary, welcome James N. Kerrick, Virginia Game Commission safety training officer, to the annual Auxiliary Board Meeting held at the Executive Motor Hotel in Richmond on January 23, 1962.

Learn to Pilot Before You Boat

There are literally oceans and oceans of fun awaiting the skilled boatman. But this fun can never be yours unless you first master the basic piloting techniques and rules of courtesy.

Watch your wake. It's a lubberly and hazardous act to set up bow and stern waves near docks, fishing boats and sail boats, especially in a light breeze. You are usually held liable for damage caused by such carelessness.

Avoid sharp turns at high speed. Not only is the risk of capsizing great, but the sudden change of direction can throw passengers out of the boat.

When passing bathing beaches, canoes, or other small boats, always reduce the speed of power driven boats and keep a sharp lookout. If anyone is in the water close by, operate at dead slow until you pass him. Spinning propellers can (and, unfortunately, do) kill people.

To pull away from a dock, make sure your stern is clear before giving a left or right rudder. This will save your boat from scrapes and nicks. When

Allstate Insurance Safety Crusade

mooring, make your approach slowly preferably into (against) the wind and current.

Clarification of Fire Extinguisher Regulation

As reported in the March 1962 issue of VIRGINIA WILDLIFE, some boat owners are having to place new fire extinguishers aboard their boats. A recent U. S. Coast Guard regulation has banned the use of vaporizing liquid (carbon tet) fire extinguishers since *January 1, 1962*. These extinguishers have been banned because of the poison gas produced by their use.

If you have or are purchasing a new boat on which it is necessary to carry fire extinguishing equipment, then you must have aboard only approved fire extinguishers.

LETTERS

(Continued from page 3)

More Comments On Seasons

IN connection with your request for comments on an early small game season, may I go on record as being highly in favor of this. I see no reason why the season on small game could not be opened about a month earlier—perhaps on October 15 (most of the birds and animals are fully grown by then) —and close on December 15. Then open the big game season for the usual period west of the Blue Ridge and until January 15-30 east of the Blue Ridge. Hunting pressure would probably be increased on both types, but this would probably eliminate overcrowding of the natural ranges.

Another reason for having separate seasons is that I have a large German shorthaired pointer whose white tail, size, and coloring could be mistaken for a deer. I am deathly afraid to take him in the field near deer country as some over-eager deer hunter might shoot him. I also like to hunt deer, but prefer bird hunting with the dog. If there were a split season, I would probably try to hunt both.

Also, I would like to see the opening date adjusted to fall on a Saturday. My home state endeavored to do this, but in Virginia most of the opening dates fall on a weekday. Of course, in the Middle West and West they also have Sunday hunting, but that is neither here nor there at this time.

Another thing somewhat confusing is the snow law. I would like to see it either eliminated or clarified. This year, for instance, where I hunted, the entire Christmas season was devoid of hunting small game because of the snow cover of about one inch. Small game has no trouble escaping the hunter with a slight snow cover. In fact, it seems to be harder to locate the game as most of it heads for the heavy cover during snow. At least a clarification of what is snow cover (that is, one inch, two inches, etc.) would be helpful in determining whether hunting is legal.

In another vein, one letter I read in VIRGINIA WILDLIFE stated that he preferred the seasons to remain the same and then complained of 20 or more dogs running loose on his property. He suggested as a cure for this a $10.00 annual license fee for all dogs. I am willing to wager that the majority of those loose running dogs do not have a license anyhow and a higher fee would probably mean less licensed dogs, and his problem would still be the same. Personally, I value my dog and his training highly, and whether I paid $1.00 or $10.00 I would still endeavor to train him not to destroy livestock or property when he is in the field, and he is also kept at home when I am out hunting with him.

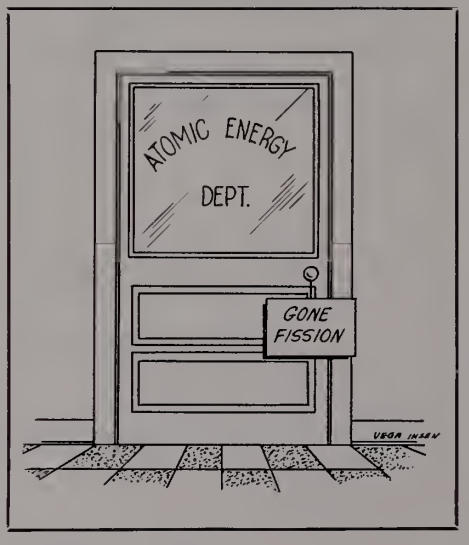
I wish to commend you at this time on the quality of the VIRGINIA WILDLIFE magazine and I hope that our hunting and fishing laws can be changed to provide more recreation and enjoyment for those of us who hunt and fish, not for the amount of game we can acquire, but for the pure enjoyment of the out-of-doors, and, as in my own case, of training and watching a good bird dog work.

Robert A. Powers
Arlington, Virginia

I HAVE been very much interested in the letters to the editor concerning the proposed idea of having small game season open prior to the big game season, say about the first or tenth of November. I have always enjoyed VIRGINIA WILDLIFE better than any magazine that I take, and these letters and views on such an important matter certainly added a lot of interest and enjoyment for me.

There is one reason for this early small game season that I regard as a good one that has not been mentioned. As a livestock farmer, I start feeding my cattle about November 20, which means that I can't hunt any time that I want to. Therefore it is almost necessary that I post my own farm until I get time to hunt a little between feedings; otherwise, the rabbits, quail, and grouse are thinned out before I can get a chance to hunt. With an early small game season before feeding starts I can leave my notices in the woodshed and join the other hunters on the first day of small game season. As a farmer and an employee of the Department of Agriculture and a sportsman, I think that there is a reason behind most posted land. Let's remove the reasons and see if the posters won't fall down.

John H. Myers
Pennington Gap, Virginia



I HAVE been wanting to write you for some time concerning the bowhunting season. What I have to say has been going around among the archers of the Shenandoah Valley for quite awhile.

First of all, let's consider lengthening the archery season next year. Deer are smart creatures and one just doesn't go out and kill one, especially with a bow. I have studied the deer kill in the state by archers and I don't think it will hurt the population by having the archery season longer.

Next is having a special short season early. Many other archers have agreed with me, and are willing to work for this short season. A real good date could be around the first of September. *Three days* are very good and the deer wouldn't become extinct in that short period of time. Archers are proud people, and think of the support and promotion you could give this sport. That three-day season would give us a chance to explore new territory and test our equipment for the longer season ahead.

Don Alexander
Harrisonburg, Virginia

THE VIRGINIA WILDLIFE magazine is my favorite; I really enjoy it.

In the January 1962 issue there are several letters written by sportsmen from different parts of Virginia. I would like to say a few things about an early small game season and their letters. I have talked to 19 other hunters here in the county (Nottoway)—bird, deer, rabbit, turkey hunters who really go for their type of game. I hunt rabbit and deer myself and enjoy hearing the hounds run as much as anyone. We came to the conclusion that if there is any change in the seasons at all, the season on deer and turkey should come in first; also we don't see where deer hunters disturb the small game as much as the small game hunters disturb the large.

I know of four times this past season where bird hunters didn't pass up the chance to shoot our buck when we were waiting for him a couple of hundred yards away, but I don't know of a single deer hunter shooting a quail from in front of a bird dog, with the owner close by.

Also, (with reference to) the letter from E. K. Adams, I would like to say that poker chips and drinking are what I find with small game hunters. Don't judge everybody by a few. In the letter from John R. Taylor saying dogs destroy so much game, don't forget the friendly little house cat. One cat will destroy as much game in one year as five dogs. Why not put a tax on the cats?

To sum it all up, I believe the hunting season for all game here in most of the state could be extended for two or three weeks —coming in earlier would be best— and not hurt the game. The track we counted crossing a five-mile piece of road showed the deer population has not been hurt here this year.

O. J. Fathbruckner, Jr.
Crewe, Virginia

I AM a new subscriber to your magazine, which I have greatly enjoyed until your last few issues. In them I have read something that has disturbed me greatly, that being the desire on someone's part to change the deer season in Virginia to November 30 or the first week of December.

You may wonder how this can concern a Maryland resident. I and a group of six other Marylanders happen to work for a company that does not permit vacations in December. This part of our problem began right after the war and forced us to give up deer hunting in Maryland. Since Virginia had its season in mid November, we transferred all our hunting to your state, for which I might add we pay a pretty good premium— $26.75 by the time we pay national forest, big game, and deer damage stamps. In all fairness, I must add your fine game management has made it worthwhile.

We formed a hunt club and purchased ground in both Grayson and Highland counties of Virginia. We further put 28-foot aluminum trailers to sleep seven on both pieces of property, to use as our hunting camps. We visualize losing all this and having to give up deer hunting altogether if your change in the deer season is put through. We urge you very strongly not to change the season as vast numbers of out-of-state hunters such as ourselves will be affected. Please take this into consideration in making your decision.

Robert B. Sturgill
Marriottsville, Maryland

MUCH has been said recently about the merits of opening the small game hunting season at an earlier date. Please let me add my name to those who favor this proposal. However, if such a change is to be made, let's make it practical and confine the reasoning to something more sensible than blaming it on the deer hunters, like some are doing.

In my opinion the primary reason for opening the small game season earlier should be to take the pressure off wildlife before hard winter sets in and to allow sportsmen to get into the field when the fall days are much more enjoyable. In this way they could harvest game that will be lost during the winter anyway and would not normally lose hunting days because of snow.

Why not open the small game hunting season in late October and close it January 1? This would make it approximately the same length as the present season and would allow wildlife to battle the severe winter months without interference from hunters. Why not open the deer season east of the Blue Ridge around the 10th of November and let it also expire on January 1? This would allow the small game hunters approximately three weeks hunting without so-called interference from the deer hunters and would also allow the deer hunters to enjoy the milder fall days.

If the suggestion to open the small game season in late October is too radical a change I can see no reason why both the small and big game seasons cannot open in early November and run concurrently until early January.

The complaint that deer hunters bother the bird and rabbit hunters is a lot of nonsense. If anything, the reverse is true. It is absurd to imagine that a pack of deer hounds running through an area would jump rabbits but it is not hard to understand that a group of rabbit hunters often make it pretty miserable on the deer hunter who has been keeping a cold vigil since dawn and who suddenly finds himself surrounded by a pack of yipping beagles. The deer hunters are not complaining, however; they realize it's just one of those things. It is equally as absurd for bird hunters to complain that deer hounds flush birds to any extent. No doubt deer hounds flush a few coveys but everyone knows that the rabbit hunter is the real bird flusher.

If anyone has a legitimate complaint it is the turkey hunter. He needs quiet woods to call the birds and once the bushes are full of dogs and hunters, the wise old birds just won't talk. The small number of turkey hunters does not seem to justify any special treatment, however. The spring gobbler season would be a blessing to the turkey caller.

If and when hunting seasons are opened earlier in the fall, I respectfully request that the deer hunters be given due consideration and not shoved any further into January.

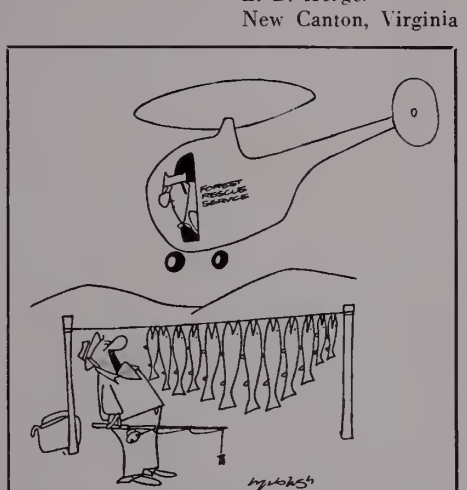
James D. Coleburn, Editor
Blackstone Courier-Record
Blackstone, Virginia

REGARDING your editorial "Early Small Game Season, Anyone?" I would suggest that the deer and small game hunting seasons go out together instead of opening on the same day. This suggestion is for the eastern section of the state. Let the small game season open November 15 and the deer season open December 15, both closing on January 31. This arrangement will give each type of hunter approximately the same shooting time as at the present. It will not interfere with the deer breeding season and will give the bird, turkey and rabbit hunters a better chance to enjoy their sport.

About four years ago the small game hunter began losing out to the deer hunters in this section. Take my place as an example. For 12 years I have followed a plan to improve habitat and increase food areas for birds and turkeys, turning over my farm of 310 acres to this project. This operation has brought in a large population of deer and an increasingly large number of deer hunters. My land forms a triangle, being bordered by two roads, making an ideal set-up for the deer hunters who turn their dogs loose and take stands with loaded guns, on the two roads. There were few days during the deer season just closed that there weren't deer dogs on my property.

All my turkeys have long since departed. Birds were constantly scattered and afraid to use the open fields. An enjoyable bird hunt is completely out of the question.

L. B. Horger
New Canton, Virginia



"I may be lost, but I don't want to be rescued. . . ."

I AM writing to you in regard to the possible changes in the present game laws in Virginia. I am a member of The Old Stag Hunting Club, Inc., located in Bath County and composed of 25 members.

First, I'd like to see abolished the very early squirrel seasons in some counties. I know from personal experience that September is no fit month to hunt squirrels. I quit hunting them in September in absolute disgust, after killing a large female who was obviously still nursing young. Then, also, it's so hot that game spoils easily and a lot of other young foolish game is shot at and/or killed.

I'd like to see all the small game seasons, turkey included, open the third week in October and run to the present closing dates. I'd like to see this statewide as it would settle a lot of confusion as to when and where one can hunt what. The reason I'd like to see turkey included is that it's almost assured that any small game hunter out hunting, say for squirrel or grouse, is going to shoot at any wild turkey that comes into range. I don't know about you but to me a wild turkey within shotgun range is almost irresistible. I don't feel that the extended season would seriously harm the game supply, as the hunting pressure gradually reduces after the first couple weeks and the initial outbreak of hunter-itis that always precedes the opening of the hunting season. Also here in western Virginia the start of January normally practically eliminates hunting anyway because of the snow law.

For the larger game season—deer, bear and possibly elk—why wouldn't the first Monday in December be a good opening day? The weather is usually still fairly moderate; also, it's just possible that the approximately two weeks later opening might give some of the larger antlered bucks time to service more does, ones that might be serviced later by scrubby bucks or ones with no antlers at all. Also this would exclude from the hunting week the Thanksgiving holiday. To me in the public forest, this is the most dangerous of all—the woods fairly teem with hunters or others, out to have a holiday. I feel that a truly devoted deer hunter will make plans as to whether he can or can't hunt that week anyway, and taking out the holiday won't make any difference.

That's about all I have to say except I am confident you people know what you are doing and only hope that people with true game management sense, such as your commission, will some day have the control we confirmed hunters wish you already had.

Charles S. Spraker
Roanoke, Virginia

IT appears to me that the hunting season on squirrels west of the Blue Ridge should be set for September 15 to November 1 and reopened November 15 for all hunting, both small and big game. This early prolonged season on squirrels would be preferable to landowners, neighbors and friends many of whom feel their rights and privileges have been taken from them when they are forbidden to kill a squirrel even on their own land when the game and foods are plentiful. Don't such regulations result in disrespect for law by a great number of people who buy no license and at the same time perhaps kill more game than all law-abiding hunters?

My observation has been that the usual opening date for small and big game, around November 20, is the beginning of Old Man Winter—cold and unpleasant for both hunting and camping. On the high mountains in Bath County this past season, two days I found the snow three inches deep, with nothing to legally hunt for or shoot at except deer.

Let's be considerate and give the hunters a pleasant vacation week during the year.

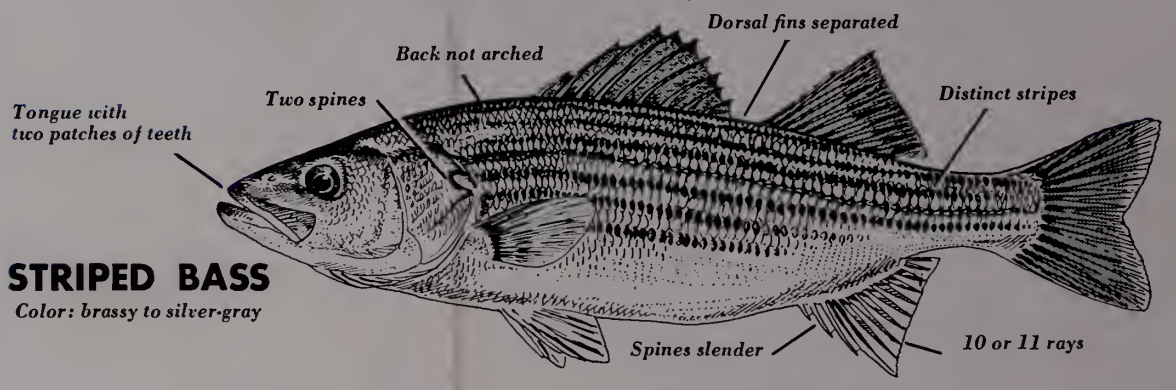
G. C. Honeycutt, D. D. S.
Big Stone Gap, Virginia

They Want No Gathright Dam

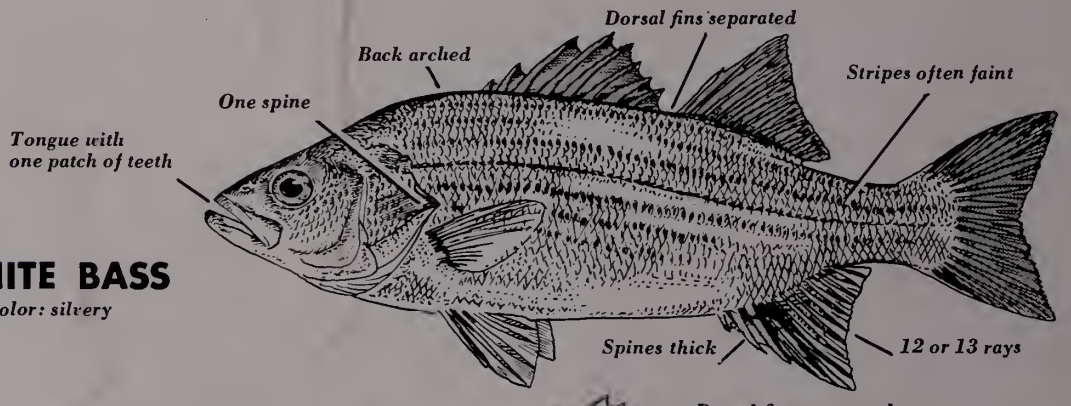
IN a meeting of the directors of the New Kent Road Safety and Legal Hunters Association on January 21, 1962, it was unanimously resolved that the New Kent Road Safety and Legal Hunters Association is opposed to a combination hydro-electric and flood control project which will flood a large portion of the T. M. Gathright Wildlife Management Area and render other substantial portions inaccessible. The opposition of the Commission of Game and Inland Fisheries to the abovementioned project as published in the VIRGINIA WILDLIFE issue of December 1961 is endorsed in every respect.

New Kent Road Safety and
Legal Hunters Association
M. Cary Johnston, Secretary
Richmond, Virginia

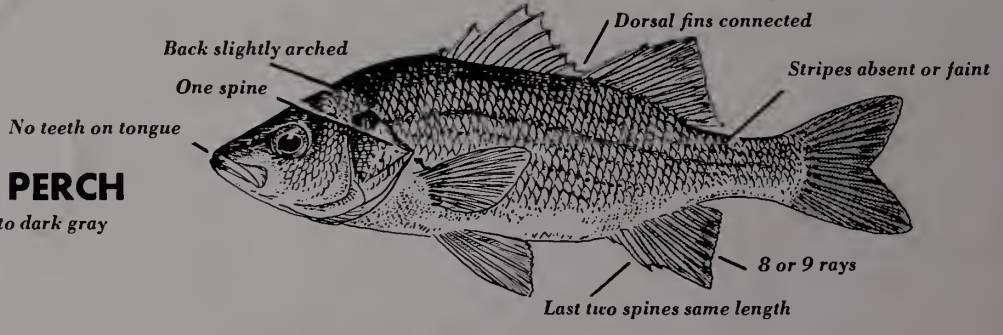
Know These Fish



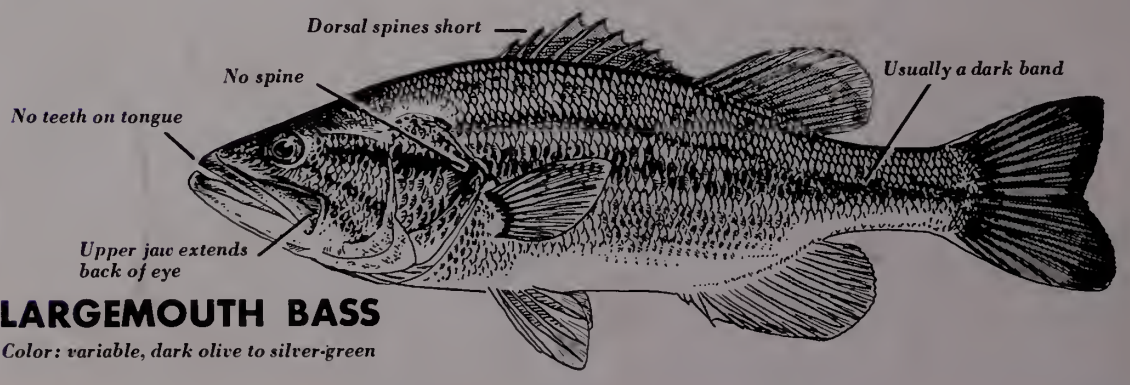
STRIPED BASS
Color: brassy to silver-gray



WHITE BASS
Color: silvery



WHITE PERCH
Color: silver to dark gray



LARGEMOUTH BASS
Color: variable, dark olive to silver-green